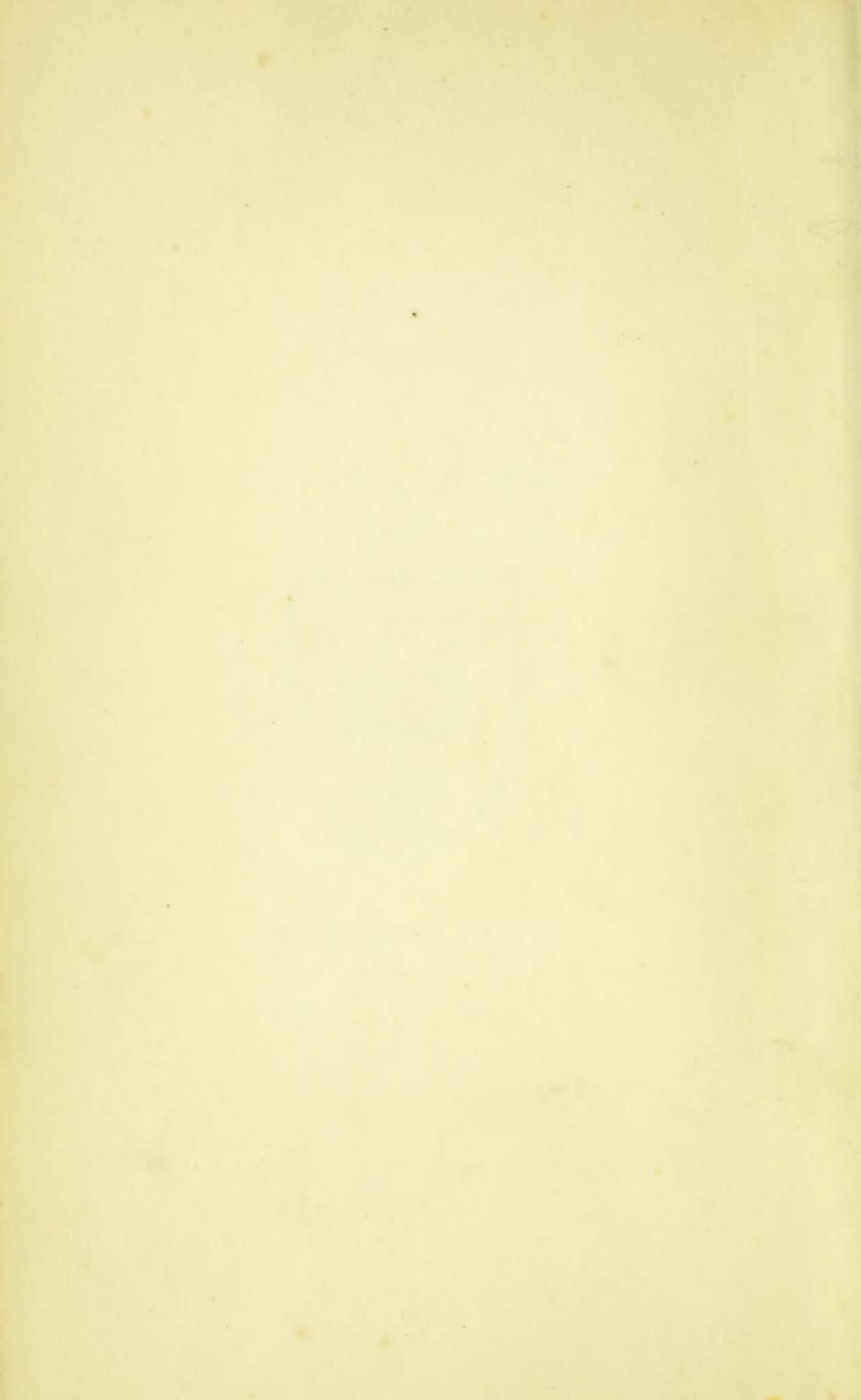


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A
PRACTICAL WORK
ON
THE EYE.



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A

PRACTICAL WORK

ON THE

DISEASES OF THE EYE,

AND THEIR

TREATMENT,

MEDICALLY, TOPICALLY,

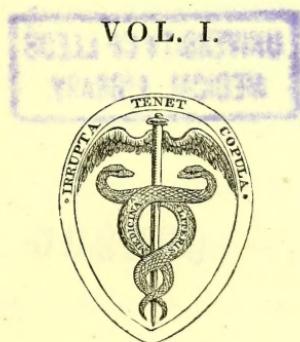
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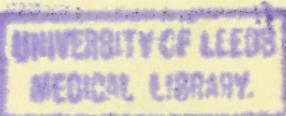
BY
FREDERICK TYRRELL,

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LONDON.

TO MY OPHTHALMIC PUPILS.

GENTLEMEN,

IN dedicating the following work to you, I am much gratified by the opportunity afforded of expressing the great satisfaction I have derived from my intercourse with you, in the performance of my duties at the Ophthalmic Hospital.

Many of you have repeatedly expressed a wish, that I should publish on ophthalmic diseases ; I do so, partly, in compliance with such wish ; and, also, with the conviction, that it is a duty I owe to the profession, to put them in possession of the result of a long experience, in a most ample field for enquiry and observa-

tion. I have now been attached for more than twenty-two years to the Ophthalmic Hospital ; and, for the last twelve of them, have held the most responsible professional position in it.

As a foundation to my work, I have adopted the plan which had been drawn out by Dr. Farre and Mr. Saunders, and which I found in operation when I first joined the Institution ; but the plan has been necessarily modified and augmented, as the ophthalmic department of medicine has extended.

In raising the superstructure, I have drawn my materials from two sources :

First, and principally, from the natural sources, which the Hospital has so abundantly afforded. And,

Secondly,—from the experience and labors of others ; which, however, I have invariably tested by the former ; from the latter source, I have obtained much useful and valuable information,—for which, I beg leave to offer my

kind acknowledgments to most of the modern authors on ophthalmic medicine and surgery.

My knowledge has been collected, much as the industrious bee collects its store, from cultured and uncultivated sources ; and, as the provision of the busy insect is said to be most precious, when obtained from uncultivated flowers—so, I consider, that I have gained my most valuable knowledge from observing nature simply, but closely, and, I trust, without prejudice.

One principal object, which I have had in view, in forming the present work, has been to render it as practically useful as possible ; and I have, therefore, avoided, as much as I could, the discussion of disputed points in pathology and practice ; and I have, simply, and I hope plainly, stated my own opinions, without expressing my reasons for differing from others : this may subject me to an accusation of arrogance ; but, had I attempted such explanations,

I must have greatly augmented the bulk of my work—for which, I believe, the majority of those who may peruse it, would not have thanked me ; and, I feel, that there are so many now scattered in practice, through the empire, who are acquainted with my principles of practice, and reasons for particular views, that I shall not stand in need of champions to defend my opinions.

I have the honor to remain,

Gentlemen,

Yours sincerely,

FREDERICK TYRRELL.

26, *New Bridge Street*,
April, 1840.

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INTRODUCTION.

THERE is no part or organ of the body, which exhibits equal variety in structure, more beauty of arrangement, or delicacy of organization, than the eye; but above all, there is no other part or organ in which the structures are formed and arranged that they can be brought so immediately and so clearly under observation.

The investigation of the structures, of the functions, and diseases of the organ of vision, offers, therefore, to the student advantages and interest, which are not afforded by any other department of medicine or surgery; inasmuch as he can clearly see the origin, progress, and termination of diseased action in the more important textures; can learn how disease is modified in them by internal and external circumstances; and can observe the operation of the remedial agents employed. Thus, by careful observation, he may soon obtain an accurate knowledge of the signs or symptoms of the

various forms and degrees of morbid action, in each particular structure ; and he may employ such knowledge, most advantageously, in aiding his diagnosis in diseases of other organs, in which a like structure or structures exist, but which may be hidden from view ; and, further, by seeing the effect of remedies, employed in the cure of various ocular diseases, he may gain much excellent practical information, relative to treatment of diseases in other parts. For example :

The diseases of the conjunctiva explain many of the phenomena of the diseases of the urethra ; and much assistance may be obtained in reme-dying some affections of the latter, by adopting treatment, which has been successful in sub-duing analogous disease in the former : from the morbid conditions of the sclerotic coat, and the effect of particular remedies in relieving them, much may be gained in the treatment of diseases of fibrous tissues, in other parts ; and diseased changes in the aqueous membrane, and the treatment by which they are subdued, render it easier to combat the affections of other serous membranes, &c., &c.

Further, this interesting department of medi-cine makes clear and distinct the influence of other parts upon this delicate organ, whether nearly or remotely connected with it ; and

teaches the importance of patient investigation of the whole system, before proceeding to the treatment of disease, however simple it may appear to be ; for a disease which seems, on superficial view, to be purely local, is frequently not so ; but, perhaps is connected with some distant disturbance : very few of the ophthalmic affections are purely local ; and by far the most serious and destructive forms of morbid action in the eye, are depending upon, or influenced materially by, derangement in other organs, or in the system generally ; so it is, also, with other parts, or organs of the body.

Besides, the cautious and delicate manipulation, necessary in the surgical treatment of ophthalmic diseases, cannot fail to be of much service, in the practice of any other department of the art.

I trust that I have now stated sufficient to prove the interest and importance of the ophthalmic department of medicine ; and, I hope, enough to create, in some, a desire to examine it with attention : I can assure them, that it presents a field, well worthy of assiduous culture ; from which, an abundant harvest may be reaped.

In truth and in justice, Mr. Saunders has high claims upon our gratitude and admiration, for rescuing the ophthalmic department from

the barren soil of empiricism, and setting it in the fertile ground of science ; as well as for his highly successful culture of it, during the short period for which he was permitted to watch its growth. It is true, that previous to the time at which Mr. Saunders directed his attention to this subject, much had been done, on the Continent, in this highly interesting and important branch of medicine ; but the labors of our foreign brethren were but little, if at all, known here, in consequence of our political position. Even in this country, several well educated and intelligent surgeons, had, partially, turned their attention to the subject ; but principally to its surgery ; and they had effected much good in it.

No one had, however, endeavoured to grasp the whole, and free it from its impurities, and place it in its proper and legitimate position, as Saunders did. The act, on his part, was most nobly done ; for he did not take up ophthalmic medicine and surgery, solely with a view to promote his own private interests ; but he, at once, placed his prize in such a position, that all who liked, might share its benefits with him ; and great, indeed, have been the benefits to the profession and to the public, through the institution which he founded ; for it has not only afforded relief to thousands, and tens of thousands, of the suffering poor of the metropolis, and of its envi-

rons, and to many, from distant parts of the country ; but it has produced professional fruit, (in its pupils,) which has shed its seed over the British dominions, and, even, much beyond ; and this has produced similar good, in some thirty, some sixty, and some an hundred fold.

Although the principal merit is due to Mr. Saunders, yet, much also is due to one who aided him materially, in his first, and most difficult efforts ; and who has lived to promote, and contribute greatly, to the advancement of ophthalmic medicine. All who have been connected, professionally, with the Royal London Ophthalmic Hospital, must have profited from the intelligence and information of Dr. Farre ; and I should be very ungrateful, did I not acknowledge, how much I am indebted to him, for a great deal of very valuable information, not only in ophthalmic, but also in general practical medicine ; as well as for his uniform kindness and friendship, during a period of above twenty-two years, in which we have been colleagues. He has labored hard, in promoting the union of the ophthalmic department, with general science ; and has been eminently successful, in eliciting and pointing out the advantages, which the former has afforded to the latter.

My own labor has been simple, for I have had to pursue the path marked out by Mr. Saunders ;

but, with the able guidance of Dr. Farre, who is well acquainted with the original views of the projector.

My endeavour has been to render the path more distinct and easy for others ; and, in so doing, I consider that I have opened some new prospects, which would, probably, have been done by Mr. Saunders, had he lived to carry on the plan which he commenced in so masterly a style. I, therefore, claim no merit, beyond that of promoting and extending the benevolent intentions of the founder of the Royal London Ophthalmic Hospital.

IN the arrangement of the following work, I have endeavoured, as far as possible, to adhere to the same plan, in explaining the various diseases, and their treatment; and, for the most part, to state the most prominent and least variable symptoms; such as are, in fact, most characteristic of each particular disease; and I have, purposely, avoided entering into a detail of the more minute and more variable signs, which tend so much to confuse in description, and which, really, are of little value in practice.

I shall, however, take the liberty of offering some observations upon that which I consider of great practical importance: namely,

ON DIAGNOSIS.

IT must be obvious, that correct diagnosis is essential to proper and successful treatment of disease; or, that the use of remedies must be empirical, and their effects uncertain, unless the

practitioner possess a correct knowledge of the disease he attempts to treat. The means of obtaining a correct diagnosis, which should determine and guide the plan of treatment, in any particular local disease, should, in my opinion, comprehend, not merely the investigation of the local signs or symptoms ; but also include an enquiry into the condition of the system generally, and of the principal and important organs, and their functions ; by derangement of which, local disease is so frequently modified and maintained.

I would recommend the following plan of enquiry and examination, as well calculated to elicit all important facts, before the character of a local disease be decided upon, not only as regards ocular affections, but also diseases of other parts.

First,—obtain from the patient, or from those who may have the care of him, all the account they can give of the case ; limiting their remarks to points of importance : by this means, the origin, progress, and continuance of the disease, with the effect of previous treatment, will be ascertained, and the medical man will acquire a knowledge of what are termed the *subjective symptoms*—such as could be communicated without personal interview.

Secondly,—make a careful examination of the

affected part, or organ, to ascertain the morbid changes it presents ; the signs or symptoms, thus obtained, are called *objective*, (termed in the work *appearances*,)—as being principally collected by aid of vision, though, frequently, much aided by touch, and, occasionally, by other senses.

The acquisition of the subjective and objective symptoms, will, usually, enable the medical man to decide, with tolerable certainty, on the nature of a local disease ; and, may, perhaps, also shew whether the disease be purely local or not ; but, in order to determine this point, with certainty, it is further necessary to investigate the condition of the system, and of the most important organs, and their functions. In the first place, then, the character of the local affection should be elicited ;—and, secondly, it should be ascertained, whether the morbid action be purely local, or if it be connected with general derangement, or disturbance, of any important function.

Marked general disturbance, constituting fever, cannot fail to attract attention, and to influence the judicious practitioner, in the treatment he may adopt, for relief of the local disease.

There, are, however, other conditions of the system, which, often, materially influence local disease ; and which may be, and often are, overlooked or disregarded ; because they are produc-

tive of little suffering or inconvenience to the individual, or, do not appear to affect the general health. I mean the conditions of plethora, and debility, evinced by opposite states of the vascular system, principally.

In the first, the circulating vessels are full and tense ; and the pulse hard, and incompressible : such a state, now and then, exists without derangement of any principal function, and the patient seems in good health ; he is, however, disposed to acute inflammatory disease ; and local morbid action, usually, becomes very acute under such circumstances.

In the second condition, there appears to be a deficiency of the circulating fluid, and the pulse is usually small or loose, and easily compressible —this state may also exist, without any important functional disturbance, and the patient may consider himself in good health ; but in case of local disease, or injury, a salutary action cannot be established, during the continuance of such a state of the vascular system.

These two conditions of plethora and debility, though immediately opposed to each other, have each the effect of augmenting local disturbance, and occasioning a train of symptoms and appearances, which, in structures less favorably circumstanced than those of the eye, do not often present characters sufficiently decided,

to enable the practitioner to determine upon the precise nature of the affection.

In both instances, the local symptoms evinced, are often those which are considered as indicating acute disease, or excess of action ; and, therefore, when regarded, independent of the condition of the system, lead to the adoption of treatment, which proves, in many cases, not only useless, but injurious.

The proper understanding of this matter will explain many apparent discrepancies in therapeutics ; and, if understood and attended to, it must, I am convinced, greatly increase the success of treatment.

I have neither time nor space here, to state my opinions fully on this subject ; but, I shall offer a few facts, further to explain my meaning, and to prove the correctness of my views.

In ophthalmic surgery, we find that inflammation of the conjunctiva may exist, attended with the usual signs, in excess ; as pain, heat, redness particularly, and some degree of swelling, with inordinate secretion, intolerance of light, &c., &c. ; and, that such a condition of the membrane, may, in one person, be subdued, by anti-phlogistic remedies ; as bleeding, purging, abstinence, &c. ; whilst, in another patient, such treatment would not subdue the affection, but, it would yield, readily, to nutritious and tonic re-

medies ; such as a generous diet, moderate use of stimuli, and some preparation of bark, iron, or the like. *See cases 6 and 7.*

Again, after the operation for extraction of cataract, we sometimes have symptoms of acute inflammatory action supervene—the patient complaining of severe pain and heat, and the conjunctiva and palpebrae becoming swollen and red ; yet all this may be subdued, in one instance, by anti-phlogistic treatment ; and, in another, by an opposite course, or quite different remedies. *See cases 131 and 132.*

Now, although in these cases, some of the prominent features of morbid action are very similar, there always exist certain nice, but marked differences, which the experienced observer soon detects. These differences I have endeavoured to point out, in connection with the particular subjects ; and I have also, related several cases illustrative of the above statement.

Further, again.—Amaurosis sometimes occurs with headache, giddiness, dilated pupils, &c., which may be remedied, in one patient, by depletion ; and, in another, by the use of a good diet, and steel, or some other tonic medicine. (*See cases 114, 115, 116, and 117.*) In some of these cases, the difficulty in diagnosis is very great, and a correct decision can only be arrived at, by a very careful and extended investigation : I

must refer to the subject itself, and the cases attached, for confirmation of this statement. *See case 103.*

In general surgery, it is notorious, that erysipelas sometimes yields to anti-phlogistic treatment, and sometimes to tonic and stimulating treatment.

Again, that severe local inflammation, following injury, may be subdued, in one case, by depletion ; and, in another, by stimulants, and tonics.

In these instances, though there may be a great or close resemblance in the local symptoms of the cases, remedied by opposite plans of treatment; yet there may always be found a very marked difference in the constitutional power, or vigor, from the commencement.

It is necessary, then, after determining upon the nature of a local disease, to ascertain whether there be an excess or deficiency of action, in the general vascular system, as best indicating the amount of power possessed by the individual. If the pulse be found full, tense, and unyielding or incompressible, it indicates a condition of circulation which must tend to promote excess of local action, and renders depletory treatment necessary: if, on the contrary, the pulse be feeble, and easily compressed, it evinces a low state of vascular power, and calls

for dietetic and medicinal remedies, which will augment the general strength.

There is one important exception to the general rules above expressed, viz., when the brain is affected ; in which case, the action of the heart and arteries, does not, usually, afford a fair criterion of the amount of general vascular power ; because the heart and blood vessels are influenced, in common with other parts and organs, by the disturbance or diminution of nervous energy : (*see case 103 :*) every tyro in surgery is aware of the slow, labored, and compressible state of pulse, consequent upon some injuries to the brain, and of the effect produced on the circulation by abstraction of blood ; which, by relieving excess of cerebral vascular action or pressure, favors the return of a proper degree of nervous power ; so that the organs of circulation, with the other organs of the body, re-assume their proper functions.

PRELIMINARY REMARKS.

MODE OF EXAMINING THE EYE.

HAVING very frequently observed the great difficulty experienced by some medical men, in obtaining a satisfactory view of an inflamed eye, (especially when intolerant of light,) I consider that it may be useful, to give some directions, respecting the easiest and least injurious mode of conducting the examination.

When examining an eye, the subject of inflammation, the patient should not be exposed to too great a body of light; nor to a bright or direct light; but only to such a degree of it, as may be sufficient to afford a correct view of the organ; and the patient should, if possible, be placed, so as to receive the light, obliquely, upon the face. If an adult, either the reclining or recumbent posture is best—as enabling the medical practitioner to look well beneath the

superior palpebra. The patient should be directed to cover one eye with a handkerchief, or with the hand, whilst the other undergoes an examination, which should be conducted in the following manner :—the point of the fore-finger, of one hand, should be placed a little below the centre of the inferior palpebra, about the margin of the orbit ; so that by pressing the integument downwards, and, at the same time, backwards, or towards the maxillary bone, sufficient stress can be made on the skin, to cause its depression of the lid, and slight eversion ; simultaneously, the extremity of the thumb, of the opposite hand, should be placed near the centre of the superior palpebra, a little above the upper margin of the tarsus, between it and the eyebrow ; so that little or no pressure be made upon the globe itself, but so as to enable the examiner to raise the integument of the lid towards the brow, against which he may make firm pressure ; and thus, by acting upon the integument, he may raise the palpebra to a sufficient extent, to obtain a satisfactory view of the eye, without any violence to the globe : the finger and thumb of the two hands should act together, to depress the lower, and elevate the upper palpebra at the same time ; and during the separation of the lids, the patient should be directed to look downwards, inwards, and outwards, in succession ; by

which the whole cornea can be brought under observation.

In the infant, or child, a more violent plan is frequently required; that which I have found most successful is as follows:—let the child be placed upon its back, across the nurse's knees, with the head projecting on one side, towards the examiner, who should be seated, in a high chair, at the side of the nurse, so that he can receive the child's head between his knees; he can thus command the child's head, whilst the nurse commands the body and arms.

In examining the right eye, the surgeon should place the point of the fore-finger of his left hand upon the centre of the free or ciliary margin of the superior palpebra, and the extremity of the thumb of his right hand a little below the centre of the inferior palpebra, on the cheek; (the hands would be changed in examining the left eye;) he should then depress the lower lid, by stress upon the integument, as in the former instance, whilst he elevates the superior, by carrying its free margin towards the eye-brow, with the point of the fore-finger; but, in doing this, he must keep the point of the finger against the globe without pressing it, or he will evert the eyelid, and thus defeat his object; it requires a little practice to be able to do this adroitly: the operation will be facilitated by in-

vesting the thumb and finger with linen, when employed in the examination, as it prevents them from slipping.

The medical man should always bear in mind that he is examining a very delicate and highly sensitive organ, (when inflamed,) and his touch should, therefore, be as gentle and tender as possible: an observation which has been applied to the handling of a portion of intestine in the operation for strangulated hernia, would be equally well placed here;—viz., that the surgeon should imagine that he is handling a piece of the finest lace.

I SHALL offer a few remarks upon the general means to be employed in the treatment of ophthalmic diseases ; and afterwards I shall explain the best methods of using the various local remedies.

The general treatment, should, in my opinion, have for its object,

First,—the regulation of the most important secretions, as of the stomach, liver, bowels, skin, kidneys, uterus, &c.

Secondly,—the regulation of the general power by promoting and maintaining a proper condition of circulation, and of nervous energy.

Thirdly,—the correction of local morbid action, by the influence of alterative medicines.

The subject of regulation of the most important secretions is too extensive to attempt even a general explanation of it here ; but I consider such explanation to be unnecessary, because most are familiar with the subject.

Regulation of the general power is, in my opinion, of the highest importance, for I am satisfied that a salutary and curative process cannot be established or maintained whilst the general

power is, on the one hand, in excess, or *above par*; or, on the other hand, when it is very deficient, or much *below par*.

I have already offered some observations on this subject in the introduction; and shall now confine my remarks to the means to be employed to effect either a diminution or an increase of power.

The means of diminishing the force of the circulation are, principally—spare diet, free action upon the principal secretions, quietude, and abstraction of blood: the three first may be employed without risk, and will often effect all that may be requisite in a day or two; but the last should be resorted to only in urgent and hazardous cases, and then it should be employed cautiously.

I consider the general abstraction of blood to be unnecessary and improper, unless the pulse evinces a degree of *resistance or incompressibility*, besides an unusual degree of fulness, or quickness; except when there is cerebral mischief or disease, when the pulse is usually slow and labored.

In abstracting blood generally, the object should be to lessen the tension or diminish the force of vascular action, merely so as to destroy the influence of the excess in circulation over the local disease; and this may, usually, be ef-

fected by the removal of such a quantity of the circulating fluid, as just suffices to relieve the state of tension, or to diminish the force of the circulation : during the operation, the pulse should be attentively watched ; and as soon as the tension of the artery subsides, and the course of the blood through the vessel can be arrested by very moderate pressure of the finger, further loss of the fluid should be prevented ; unless the patient be unusually robust, or the local disease unusually severe, when a little more than is requisite to produce the effect I have mentioned, may be removed. The loss of blood, necessary to occasion the change in the pulse which I have described, must vary much in different persons ; now and then, we find that the change does not occur until a feeling of faintness, or a complete state of syncope, be induced ; it is not, however, necessary to produce a condition of syncope, to effect the changes in the circulation which I have pointed out.

In most instances, faintness does not occur when sufficient blood has been taken away, to produce the requisite change in the character of the pulse ; and frequently the patient does not experience much immediate relief as regards the local disease ; but after a short time, the beneficial influence of the treatment becomes apparent, in a decided mitigation of the severe

local symptoms ; and the cure can be generally completed in a shorter period, than when the loss of blood has been so great as to cause a state of depression : for, although the effects of bleeding to such an extent, as to occasion prostration of strength, usually produces a more decided and rapid relief of the urgent local symptoms, yet the morbid action which remains, commonly proves obstinate or difficult of cure, in proportion to the extent of the general debility which ensues from abstraction of blood.

It is a great mistake to suppose that it is necessary to take away large quantities of blood ; or to bleed to such an extent as to occasion faintness, in order to check severe local disease : I am confident that much more harm than good, results from such practice.

I consider the ordinary means of abstracting blood, by opening a vein in the arm to be the best, when it is advisable to relieve the fulness or tension of the vascular system.

I shall give my opinions respecting the local means of taking away blood presently.

The means of promoting and maintaining power in the circulation, are principally, diet, stimuli, and tonics ; which may be materially aided by quietude, proper clothing, and pure air.

It is essential to notice that the alimentary

canal should be free from irritation, and irregular or disordered secretion, before any part of the tonic treatment be commenced ; otherwise, it is most likely to augment any general disturbance, and tend rather to diminish, than increase the general power ; the tongue should, therefore, be clean, and the excretions from the bowels should indicate a proper state of secretion, before stimulants or tonics be administered.

When the patient is very feeble, the diet should consist, principally, of farinaceous matter, with milk, and some weak stimulus of a kind to which the person has been previously accustom-
ed ; otherwise, as a general principle in dietetic management, the patient should be allowed such food as is simple but nutritious, and easy of digestion ; and the use of stimulus should de-
pend upon the previous habits in this respect : those who have been most accustom-
ed to stimulus can rarely maintain a proper degree of power, if the stimulus be entirely withdrawn ; the use of stimulus, therefore, often becomes a matter of necessity : when it is required, it is best to give that to which the patient has been addicted ; I have often found the greatest ad-
vantage from attention to this point.

Frequently, it is desirable to aid the operation of dietetic means, and further, to promote power, by giving tonic medicines : the selection of the

tonic should be regulated by the character of the debility, and the condition of the patient: thus, when the cause of the debility has been loss of blood, or when the patient is very pallid, and has cold extremities, and small, quick, but feeble pulse, the preparations of steel, or zinc, will, usually, prove most efficacious: when the patient has been exhausted by severe or protracted febrile disease, by diarrhœa, or by want of proper nourishment, the preparations of bark frequently promote the desired purpose better than the mineral preparations; in those of feeble power and scrofulous diathesis, or in such as have been suffering from specific taint, sarsaparilla, with minute doses of iodine or mercury, generally effect most good: and in such as evince unusual nervous susceptibility with feeble power, the addition of ammonia, valerian, castor, &c., to some of the tonics which I have mentioned, is, frequently, very serviceable.

The advantages of quietude, warm clothing, and pure air, are too obvious to need further comment: the last is indispensable, in some cases; for we cannot get rid of morbid action, until we place the patient under its influence.

The correction of local morbid action can generally be proceeded with, whilst we are adopting means to lessen or increase the force of the circulation, and, frequently, much advantage results

from so doing, as the remedy employed to correct the local action may often be made instrumental in diminishing or promoting the general power : thus, in acute local disease, in connection with too much tension of the vascular system, mercury given freely, tends very much to diminish the action of the heart and arteries ; at the same time that it effects a change in the extreme circulation, and checks the local disease ; or on the other hand, when local disease exists with a feeble state of general power, small or minute doses of mercury, or iodine, frequently prove most serviceable, by promoting and maintaining a proper condition of secretion from important organs, and thus conduce to restoration of general power, whilst they also act upon the extreme or minute vessels, and check or destroy the local disease.

Mercury is, perhaps, the most useful, as well as the most powerful remedy in many of the most important ophthalmic diseases ; its beneficial influence depends, however, upon the mode of its administration. I frequently see cases in which the incautious or injudicious use of mercury has operated injuriously, and have found the diseases yield readily to the remedy when carefully employed. (*See cases 32, 66, 67.*) I shall state, briefly, some of the more important points relative to the use of mercury, respecting which

an extensive experience has made me feel confident.

Mercury may be employed beneficially in three ways :

1. As an alterative ; when it should be given in very small doses, so that it does not produce a tender state of mouth, or any of the usual marked evidences of mercurial action ; but so, that, by imperceptible degrees, it promotes a change in the circulation.

Such a mode of administration is advisable in cases of chronic local disease, threatening disorganization, in patients of very feeble power, in whom a more active use of the remedy, causes depression or irritability.

2. As a mild mercurial ; when it should be given so as to induce tenderness of the mouth, and continued so as to maintain decided, but very moderate, evidence of its effects on the system.

The mild mercurial course is particularly applicable to cases of sub-acute or chronic character proceeding to disorganization ; and when patients have tolerable power, but from age or constitutional peculiarity, as scrofulous diathesis, cannot bear the full influence of mercury, without risk.

3. To excite full mercurial action, so that the gums become tender and swollen, and the secre-

tion from the salivary glands profusely augmented. This action is required in very acute cases of local disease producing rapid deposit of fibrin, and in severe cases of deep seated disease of the eye, likely to occasion disorganization.

Mercury should not be given to produce such severe effects, unless the patient possess good power, and be free from the enfeebling influence of old age.

In all cases in which mercury produces depressing effects, so as to make the patient unusually low spirited and nervous, the dose should be diminished, or the remedy should be laid aside for a time; the most frequent cause of such an effect, is a deficiency of general power.

Very many surgeons imagine that mercury acts most beneficially whilst the patient is kept upon a very abstemious diet, and that generous living is incompatible with the use of this remedy: I am, however, perfectly satisfied that it acts more certainly and beneficially when a tolerable degree of power is maintained; and that there are very few cases in which mercury cannot be taken, provided that the patient be properly supported during the administration of the remedy: I consider it a general rule, that whenever it is necessary to give mercury for the continuance of a few weeks, that it is essential to promote and maintain power at the same time.

An evil which often results from the internal use of mercury is diarrhoea, usually of distressing character ; this is most frequent when the remedy is most actively employed ; when it occurs, the use of the mercury should be abandoned, and a dose of castor oil, with a few drops of tincture of opium, should be given ; or a dose of senna and salts, with a little ammonia and opium : the object is to act freely upon the bowels, and carry off the irritating secretion, which the mercurial has excited ; this immediately relieves the patient, and the use of the mercury can then be resumed : should the diarrhoea often recur, it is best to introduce the mercury by friction, instead of by mouth.

During mercurial treatment, the patient should avoid all sour or acid food ; all green and crude vegetables ; and the action can be maintained most steadily, if the patient be confined to his house, or to apartments well warmed : this is, however, only requisite when the remedy is used freely.

Persons under the influence of mercury are generally susceptible of cold, they should be, therefore, well clothed, and avoid exposure to cold and damp.

ON THE APPLICATION OF LOCAL REMEDIES.

THE remarks which I am about to offer on local remedies, will apply in all cases in which the remedies are named throughout the work, unless it be otherwise specified at the time.

Fomentations, or warmth and moisture, simple fomentations, or medicated.

The heat of such applications should, in my opinion, be moderate, not beyond what the hand can readily bear; moderate heat is equally grateful to the patient, and more beneficial to the affected organ than great heat, which is, I believe, prone to stimulate. The best means of using the fomentation, is by soaking a piece of fine linen or flannel in the heated liquor, and then placing it in contact with the surfaces of the palpebræ, which should be closed as when asleep. (I do not like sponge, as it is frequently gritty.) Five or six minutes of time are quite sufficient for the continuance of the fomentation at once; and the part should be well dried, when the application is laid aside.

Another plan of employing warmth and moisture, is by steam, which is, perhaps, preferable to the former, when the affected organ is excessively tender. If a large funnel be inverted over a jug containing the heated fluid, the steam which escapes from the narrow end of the tube, can be received against the palpebra, at a distance agreeable to the patient.—(Volatile stimuli may be used in the same way.)

Lotions.

Medicated fluids, which may be astringent, stimulant, narcotic, &c., &c.; and may be applied cold or tepid.

I generally use a lotion cold or tepid, as may be grateful to the sensation of the patient; and, most frequently, find that the tepid preparation is selected. If a small cup or glass, containing a portion of the lotion, be placed in a larger vessel, partly filled with hot water, the lotion acquires the warmth of new milk, (which is sufficient,) in a few seconds. Either warm or cold, the lotion should be applied with a piece of soft linen, to the surfaces of the eyelids, which should be gently closed; when sufficient of the fluid will penetrate the palpebral aperture, to effect the desired purpose: I object to the use of lotions with the conjunctiva exposed, either when they are used by eye-glass, syringe, or other method: I have seen much mischief from their being thus employed. If a case require the free

contact of a stimulant or astringent to the conjunctiva, I much prefer the application of a drop or two, through the palpebral opening. I am of opinion, further, that the application of a lotion should not be continued more than one or two minutes at a time, and never kept to the part for hours together, as I know they frequently are: too much moisture, especially with cold, is apt to induce affection of the fibrous structures.

Poultices are objectionable for the same reasons.

Solutions of astringent, stimulant, or narcotic Drops. substances.

The most simple mode of applying a drop or two to the conjunctival surface, is by a camel's hair brush, of a size to hold the portion required. The brush being loaded with the solution, the surgeon should depress, and slightly evert the inferior eyelid, by pressing on the integument of the cheek, and then pass the loaded brush between the lid and the surface of the globe; the brush and finger being immediately removed, the fluid quickly passes over the surface of the conjunctiva, in consequence of the motion of the globe and eyelids.

Heat, with very little or no moisture; it may Dry warmth. be simple or medicated.

Small square or rounded bags of linen or flannel, about three, or three and a half inches in dia-

meter, should be filled about two-thirds full with bran, or camomile flowers; and with either of these, some narcotic, camphor, or other matter, as thought proper, can be mixed; when used, they should be put upon a hot plate, or a warming pan, and when sufficiently heated, one should be placed so as to cover the eyelids, brow, &c.; and retained by a gauze handkerchief or ribbon: the application may be continued, as long as the patient pleases, (provided the bags be not made very hot,) as it is not likely to produce any mischief. It affords great relief in some cases.

Ointments.

Are employed simple or medicated, (as the lotions,) either to the ciliary margins of the eyelids, or in the neighbourhood of the orbit; it is only necessary to describe the mode of applying them to the margins of the palpebræ.

The ointment should be soft, and is therefore best prepared with fresh or well washed lard: whether simple or medicated, a small portion should be taken up, either by a short camel's hair brush, or on the point of the finger, and very gently applied upon the entire extent of the margins of the eyelids, and to the canthi, the eyelids being approximated gently at the time: it is sufficient just to moisten the edges of the lids and the cilia, without loading them: the application should be made much as the lips are moistened when a lip-salve is employed.

Oil is sometimes used, instead of lard, &c. ; but I consider it to be objectionable, when medicated, as more likely to penetrate in quantity, between the palpebrae, to the surface of the eye, than an ointment, and this is not the intention of the application. The purest grease put into the eye, produces irritation by acting as an extraneous matter.

Should be applied to the outer surfaces of the Leeches. eyelids, or upon the cheek, a little below the inferior palpebra ; they have very little effect in relieving the vessels of the conjunctiva, when placed upon the temple : after they come off, the part should be well fomented with warm water, for ten or fifteen minutes, not only to encourage bleeding from the bites, but to prevent swelling from infiltration of the cellular tissue. In infants and children, it may be desirable, sometimes, to check the flow of blood from the bites ; which can be done readily, by placing the point of a camel's hair brush, armed with a solution of nitric acid, (about four drops to an ounce of water,) into the orifice, and keeping it there for a few seconds ; generally, however, moderate pressure by the point of the finger, for a minute or two, will stop the bleeding.

There are many persons, in whom the leech always gives rise to inflammation of the skin, or cellular tissue, and, therefore, as it were, adds

fuel to the fire ; it is always worth while to enquire before they are prescribed, that they may not be used, when this idiosyncrasies is known to exist.

I have applied leeches to the conjunctiva itself, in consequence of such plan being strongly recommended ; but I have been compelled to abandon it, as it more frequently produces mischief than good, by creating irregularity of the surface of the membrane, which gives rise to irritation as an extraneous body would.

The same result has caused me to condemn scarification of the conjunctiva, in ordinary cases.

In cases requiring local abstraction of blood, when leeches cannot be procured, or when their use is forbid, the angular vein may sometimes be opened, with much advantage, but only when it is well developed ; otherwise, the cupping glass should be applied to the temple, or behind the ear, a little below the mastoid process.

The forms that I generally employ are the following :—liniment of ammonia, mustard plaster, tartar emetic plaster, blister, and issue.

With the exception of the two last named, I prefer the application to be made a little above the eyebrow, over the seat of distribution of the supra-orbital vessels : there are, however, some circumstances which render such position objectionable ; as the dislike of the patient to the dis-

figurement it produces ; or what is of much more consequence, the liability of some of the irritating matter falling over the eyelid, and getting into the palpebral aperture. I have seen this so often in children, that I generally now place the irritant behind the ear, rather than in the immediate neighbourhood of the eye.

A liniment of ammonia, made according to the following prescription, forms a useful slight counter-irritant.

Rx

Liquoris ammoniæ fortiss.	3ij
Olei Amygdalæ.	3ss
Adipis recentis.	3vss
Misce.	

It should be put into a wide-mouthed bottle, and well secured ; or the ammonia soon escapes. When employed, a small portion should be smeared over the forehead, above the eyebrows, by means of an ivory paper knife ; and it should be allowed to remain on, till it produces a smarting or heat ; (from half a minute to a minute;) it should then be washed off, by sponge and water. It may be repeated daily.

Mustard plaster,—should be made, by mixing together equal parts of flour and fresh mustard powder, with a little warm water, to the consist-

ence of a thick paste : a portion being spread upon lint, thickly, should be applied to the spot selected, and allowed to remain on, from ten to twenty minutes ; in fact, until a sensation of tingling and heat is produced : the object should be, to produce a redness, or slight inflammatory action, without vesication ; an application of a fresh plaster may be made every day, or as often as deemed requisite.

Tartar emetic plaster.—Some tartar emetic ointment, of the strength of two scruples to four drachms of spermaceti ointment, should be spread thickly upon a piece of lint, of the size required ; (about that of a shilling;) this should be placed on the part to be irritated, and confined by a portion of adhesive plaster, which should cover the lint, and extend beyond it, all round, to a sufficient extent to permit of firm adhesion to the surrounding skin : this should not be disturbed, until the patient feels some decided irritation or soreness, which will not, probably, occur for three or four days ; when it does take place, the plaster should be removed, which will expose some pustules, and these should be dressed, twice a day, with a piece of linen, dipped in sweet oil, until the pustules have nearly disappeared ; a fresh portion of the tartar emetic ointment should then be applied, so as to induce some fresh irritation, after which, the oil should

be used again, and so on, for any period desired. This plan affords the means of keeping up almost any degree of irritation, without much suffering to the patient.

Blisters,—are more efficacious, in my experience, when frequently repeated, than when kept open by an irritating ointment ;—I believe that the suffering, which they produce, is lessened, when a piece of thin muslin interposes between the skin and blister ointment, which also has the advantage of preventing any thing like strangury, from absorption of the cantharides. For children, I frequently direct a few cotton threads to be smeared with some of the blistering ointment, and to be placed behind the ear, during the night ; for I find that a very trifling degree of irritation is sufficient, in many cases. The continued or perpetual blister, is very objectionable in young children, for its irritation renders the patient restless, and the constant distress it produces, impairs the general health.

Issue or seton.—I have for many years abandoned the employment of these means in the treatment of the diseases of the conjunctiva, or cornea, for which they were formerly so frequently used. I am satisfied that they accelerate recovery, in some cases, when placed near the affected organ ; but I am also satisfied, that dis-

ease cured, by such aid, is very prone to re-appear, when the remedy is withdrawn ; whilst the more tedious cure, without such assistance, is more permanent and complete ; besides, the indelible scar which results from either form, not only disfigures, but is often detrimental to the prospects of that class of persons destined for servitude ; I have known instances of its being the cause which has prevented them from being accepted as servants.

In some children of scrofulous habit, frequently suffering from ophthalmic disease, and also having occasional cerebral or hepatic congestion, or cutaneous affections, I direct an issue to be formed, but at a distance from the eye—the spot, which I find least inconvenient to establish a drain from, is near the point of insertion of the deltoid muscle, in the left arm : to make the issue, I raise a portion of integument, and subjacent cellular tissue, with the finger and thumb of the left hand, and then pass a sharp pointed knife through the raised part, so that a simple clean wound results when the fold of skin is allowed to resume its proper position. I then insert one or two glass beads between the edges of the wound, and confine them in the wound, by means of a compress, and bandage. If the granulations from the wound become too exuberant, I partially destroy them by the hydrate

of potash. The counter-irritation should be continued, in such cases, till the age of puberty becomes manifest.

Issue or seton in the neck, or*behind the mastoid process, is, sometimes, serviceable, in adult or elderly persons, suffering from cerebral affections, which tend to produce amaurosis.

In all inflammatory or congestive diseases of ^{Protection} the eye, it should be protected from the stimulus ^{of eye.} of much, or bright light, whether the organ be intolerant of the light or not; and, in all cases, the patient should be placed in a room, from which the light is in part, or in such degree excluded, as to prevent any distress to the organ, rather than the eye be covered closely by bandage, or partially by shade, which always increases heat and irritation.

When a patient is recovering from an inflammatory attack, the eye should be gradually accustomed to the influence of light again; and, under such circumstances, a shade, or a pair of plain dark glasses are beneficial; but the latter should not have a deep tinge, only just sufficient to modify the brilliancy of the white rays.

Further, in all inflammatory and congestive diseases of the eye, the patient should not be ^{Recumbent posture objectionable.} confined to bed, or allowed to be much in the

recumbent posture, if at all ; for even when in bed, the shoulders and head should be raised and well supported. The relief obtained by position in the acute diseases is very great, and it is, frequently, taken advantage of by the patient, when neglected by the medical man ; for I have often heard the sufferer observe that he had been sitting up in bed the greater part of the night, and that he had been easy, or his pain had been very much lessened, whilst he maintained such a position ; but that his symptoms became aggravated, as soon as he had resumed the recumbent posture.

A N A T O M Y
OF
THE CONJUNCTIVA.

THE conjunctiva is a thin, delicate, and transparent membrane; named from its connecting the globe and palpebræ, covering a portion of the anterior surface of the former, and the posterior surfaces of the latter—being, therefore, extended in two layers between these parts.

It is, in appearance, smooth, shining, and moist,—its transparency allowing the subjacent textures, with which it is connected, to be seen through it.

It may be divided into two parts:—1st. That which is connected to the palpebræ, which is termed *conjunctiva palpebrarum*.—2nd. That which invests the anterior portion of the globe, which is called *conjunctiva oculi*.

It extends from the inferior or free margin of the superior palpebra, (where it is connected with the integuments,) upwards on the inner surface of this lid, being closely attached to the

inner surface of the tarsus, and covering the meibomian glands ; it is, however, continued above the superior edge of the tarsus, where it is attached to the extended tendon of the levator palpebræ, beneath the superciliary ridge of the frontal bone ;—it thence becomes reflected, turning on to the surface of the sclerotic and attachment of the superior rectus, from whence it is continued downwards over the cornea and sclerotic to beneath the inferior margin of the orbit, where it again turns upwards and forwards to line the inferior palpebra,—being, in this situation, first connected with the inner surface of the fibrous texture, which binds the tarsus to the orbitar edge, and, afterwards, closely fixed to the inner surface of the inferior tarsus and meibomian glands, as far as the superior or free edge of the lid, where it is continued with the common integuments. In tracing its extent from the external canthus, it is found to pass outwards, behind the angular union of the tarsi, towards the temporal edge of the orbit, being attached to the fibrous layer which fixes the tarsi to the orbit, in this situation ; not, however, extending so far as the orbitar edge itself—being reflected upon the surface of the sclerotic, at the distance of a few lines, outwards from the termination of the palpebral aperture. Internally, or to the nasal side, it lines the round

depression forming the inner canthus, and covers the surface of that small red body, called the caruncula, which principally occupies this canthus. A little exterior to the caruncula it becomes folded inwards, presenting an acute concave edge, directed outwards towards the cornea ; the posterior layer of this fold is continued but a short way inwards, towards the nose, behind the inner canthus, from whence it passes on to the surface of the sclerotic, and is again continued outwards towards the cornea.

At all the points of reflection, more particularly above the superior lid, and below the inferior, the attachment of the membrane to the surrounding textures is lax, so as not to interrupt the free motions of the globe. When the eyelids are closed, the surface of this membrane is, for the greater part of its extent, smooth and uniform ; but when the palpebræ are separated, it becomes folded or wrinkled, at the points of reflection above alluded to, more particularly above the superior lid, in consequence of the greater extent of surface and motion in this portion of the exterior appendages.

The conjunctiva is connected firmly to the inner surfaces of the tarsi and meibomian glands, and very loosely, as I have just described, at the point of reflection ; the attachment to that portion of the sclerotic which it invests is very

slight ; but it becomes more firmly joined to the anterior surface of the cornea, and particularly so at the line of junction, between the cornea and sclerotic.

The structure of the conjunctiva appears to be chiefly cellular, and although continuous, and, I believe, properly classed with the mucous membranes, it does not exhibit in the natural state a villous appearance, which, however, becomes apparent in some states of disease ;—it is continuous with the mucous membranes of the nose, through the puncta lachrymalia and nasal duct ; and, further, with the lining membrane of the lachrymal ducts, at the outer part of its superior reflection from the lid to the globe.

The conjunctiva, in the natural state, exhibits but slight traces of its organization, being chiefly supplied by serous vessels, very few being capable of circulating the red particles ; and such are more evident on the palpebral than the ocular layer of the membrane ; its blood-vessels are derived from those of the palpebræ, and also from the branches which pass from the ophthalmic artery to the recti muscles of the globe ;—the former supply the palpebral division of the membrane and anastomose with the temporal, facial, and surrounding vessels—the latter supply the ocular portion of the conjunctiva ;—but the vessels of the two portions of the membrane

unite or anastomose freely, and principally at the points where the membrane becomes reflected. Nervous filaments cannot be traced into its texture, but we may presume, from its extreme sensibility, that it has an abundant nervous supply.

The existence of absorbents cannot be demonstrated.

The conjunctiva is destined to connect and protect the corresponding surfaces of the palpebræ and globe, and to secrete a fluid, for preserving a constant state of moisture, necessary to prevent mischief from friction, during the frequent and rapid motion of these parts on each other. It is extremely difficult to ascertain the precise nature of its secretion, on account of the constant admixture of the secretion of the lachrymal gland. I have thrice had opportunities of inspecting the conjunctiva after the removal of the lachrymal gland, when, of course, no secretion of tears could take place. In these instances, the conjunctiva retained its usual brilliancy and moisture—proving, therefore, that it secretes its own proper fluid, and that the humidity of the eye is not, as some have supposed, dependant on the secretion of the lachrymal gland alone.

THE MORBID CONDITIONS
OF THE
CONJUNCTIVA.

THESE are mostly included under the general term of *ophthalmia*, and are as follow :

1. A simple, partial, or general distention of its blood-vessels by red blood, with a diminution, or an augmentation, of the natural secretion : this most frequently affects the ocular portion of the membrane ; and may be of rapid occurrence, or of slow developement, constituting the two forms, acute and chronic.
2. A partial injection of the vessels with red blood and the formation of vesicle or pustule ; the latter being invariably confined to the ocular division of the tunic, whilst the former extends to the palpebral part ; and the secretion from the membrane and from the meibomian glands, is often somewhat opake and viscid. This also exhibits an acute and chronic form.
3. A greater degree of action under which the membrane becomes thickened, its surface villous, and its secretion thick and opake.

This form of disease usually commences in the palpebral portion of the membrane, but rapidly extends to the ocular surface, and the meibomian glands participate in the morbid action. Its character is generally acute.

4. A more intense action still, which produces a very rapid and extensive thickening of the membrane, with a deposit of serum or fibrin into the subjacent cellular tissue; the villi of the surface become distinct, and the secretion of a purulent character. As the former, it begins in the palpebral division and extends from thence to the ocular part, and the meibomian glands are likewise affected. It is usually of very acute form; but from it, as well as occasionally from the last described affection, an obstinate, slow, or chronic affection results, which leads to—

5. A general thickening of the palpebral part of the membrane, under which its villi become very largely developed, and its secretions thick, opake, and irritating—by slow degrees the ocular portion becomes involved, and even that part, which invests the cornea, participates in the disease. Occasionally, portions of the membrane, or some of the villi, are protruded, forming excrescences or polypi.

6. Under continued exposure or irritation, the membrane loses its power of secretion, and assumes the character of cuticle.

7. Under peculiar circumstances, the more exposed part of the ocular division of the tunic undergoes in part a slow change, becomes thickened and loaded with red vessels, forming *Pterygium*.

8. Occasionally a slighter degree of similar change occurs, with a deposit of fatty matter in the subjacent cellular tissue.

Severe and continued disease, of the ocular portion of the conjunctiva, produces mischief in the cornea; whilst a similar affection of the palpebral portion creates disease in the meibomian glands, and in the substance of the palpebræ. This extension of disease takes place, from the intimate vascular connection of the respective parts.

The first described, and most simple form of conjunctival disease, is usually present, with the acute affections, of the other tunics or appendages; but more especially, when such are affected, as have an immediate vascular connection with it—as the cornea, palpebræ, &c. The conjunctiva is reproduced when destroyed by accident or disease, excepting when two opposed surfaces are at the same time denuded of the membrane, and from contact unite; thus the globe and palpebra become sometimes joined together.

In describing the diseases of the conjunctiva,

I shall confine myself to such a division as is offered by a marked difference in the symptoms, character, and progress of the morbid action, or as is called for by any circumstance which renders decided variations in treatment requisite—in fact such divisions as lead to practical good, and render unnecessary technical minuteness.

The most common and important diseases of the conjunctiva are termed **OPHTHALMIA**, of which I admit the following varieties :—

SIMPLE OPHTHALMIA.

PUSTULAR OPHTHALMIA.

CATARRHAL OPHTHALMIA.

PURULENT OPHTHALMIA.

CHRONIC OPHTHALMIA, not as a result of acute disease, but originating in chronic form.

STRUMOUS or SCROFULOUS OPHTHALMIA, and

EXANTHEMATOUS OPHTHALMIA ;
the two last are modifications of most of the above varieties.

OF SIMPLE ACUTE OPHTHALMIA.

Definition. Simple inflammation of the conjunctiva.

Synonyms. Ophthalmia simplex—conjunctivitis.

Local symptoms. A slight degree of pricking pain ; a feeling of heat and stiffness in the palpebrae, with a sense of dryness of the surface, from want of moisture ; or an increase of secretion which flows over the lower eyelid to the cheek ; frequently a feeling as if some extraneous matter were lodged on the surface of the membrane ; sometimes exposure to bright light augments the suffering, but intolerance of light is not a constant symptom—after a time, pain of a sharp and severe kind occurs, and it, as well as the sense of heat, is augmented by the recumbent posture.

Appearances. The ocular portion of the membrane exhibits a partial or general pink or red (vermillion) appearance, which upon close inspection is found to result from the red particles of blood with which its vessels are injected, and these vessels may be traced pursuing a slightly tortuous course, from the orbital circumference of the

membrane, towards the margin of the transparent cornea (*see plate 1, fig. 1*) ; the largest may be seen passing from near the attachments of the recti muscles, and gradually diminishing in size as they proceed towards the cornea ; but at the same time sending off numerous minute branches, which freely join or anastomose with others from neighbouring vessels, so that a beautiful weblike aspect results.

As the inflammation increases, this reticular appearance becomes more intricate, and in great measure confused, or destroyed, in consequence of the more minute vessels being filled with red blood, and the surface, therefore, being more uniformly florid :—when the disease is very severe and rapid in its progress, some of the vessels give way, and extravasation occurs, in small spots, between the conjunctiva and sclerotic.

Sometimes the secretion is so abundant as to lodge in quantity on the surface of the eye, and pass over the lower eyelid.

In severe cases, or in those of long duration, the palpebral conjunctiva participates in the affection, and becomes red from its vessels being filled with red blood.

Slight febrile action ensues only in very severe Constitutional symptoms. cases.

Sudden changes of temperature, exposure to Causes direct. cold, winds, or damp ; external violence, as a

blow ; lodgement of extraneous matter on the membrane, as dust, sand, flies, beetles, particles of iron, brass, flint, &c. ; or inversion of one or more cilia, &c.

Causes predisposing. Disturbance of an important function, as of stomach, bowels, skin, uterus, &c., or general derangement.

Persons liable to. It occurs at all periods of life, and in either sex.

Modifications. Though often a purely local disease, yet simple ophthalmia is frequently sympathetic with some important, though perhaps distant, functional disturbance ; the principal of which have been mentioned as predisposing causes.

It is also modified by the condition of the general health, or peculiar diathesis, as struma ; the latter will, however, be considered separately.

Treatment. The lodgement of an extraneous substance is so frequent a cause of simple ophthalmia, that the surgeon should always make careful enquiry and examination, to ascertain if such cause exists. Sudden occurrence of the disease, and continued suffering, usually indicate the presence of extraneous matter ; but I have seen many cases, in which such marked circumstances were wanting, where I have detected a foreign body, which had evidently been the cause of the ophthalmia, as the disease has subsided on its removal.

Foreign matter lodges either beneath the superior palpebra, or becomes embedded in the

conjunctiva over the cornea or sclerotic ; occasionally it is so minute as to escape notice, unless from a careful examination by an experienced person. After the removal of extraneous matter, or when the affection has been produced from other cause, the treatment must be regulated by the degree of inflammation, and the age and constitutional powers of the patient.

In mild cases, a brisk aperient, abstinence, and rest, with the application of tepid water, or a weak solution of acetate of lead, will effect all that is desired ; in more severe cases, a few leeches may be applied upon the lower eye-lid, or a cupping glass to the temple ; and when the disease is very acute, and the patient possesses good power, general bleeding may be beneficially employed. This plan will, however, only succeed when there is no important functional or general derangement ; for the ophthalmia will rarely yield whilst such derangement continues. It is further necessary, therefore, to examine the condition of the principal functions to treat with good effect ; this should always be done before treatment is commenced, otherwise a disease apparently very trifling will baffle the surgeon.

It must be recollected that important functional derangement is very frequently a predisposing cause of ophthalmia, and rarely the direct cause ; but when once the disease is excited, that which

has predisposed to it modifies it, and continues to have a material influence over it : thus ophthalmia excited by sudden change of temperature, violence or any ordinary cause, at a time when any material functional disorder exists, becomes influenced by the functional disorder, and will not, in many instances, subside, until the functional disorder be remedied.

I shall illustrate this subject.—

Functional disorder of stomach or liver.

Case.

Functional derangement, which I have frequently found to influence simple inflammation of the conjunctiva, has been in the stomach or intestinal canal, and evidenced by the state of the tongue, of the appetite, of the secretions, &c.

1. A girl about eleven years of age applied at the London Ophthalmic Hospital, during the summer of 1837, suffering from a severe attack of simple ophthalmia in the right eye, but apparently little other disorder, except a loaded and foul state of the tongue ; the appetite was good, and the bowels relieved daily. The condition of the tongue, together with the absence of other cause for the ophthalmia, induced me to point the case out to our pupils, as probably depending upon a loaded state of bowel or indifferent secretion, and I prescribed, therefore, two active doses of calomel and scammony, with a light farinaceous diet without any local remedy ; three days afterwards the girl presented herself at the Hos-

pital nearly well, and I found that the medicine had caused the evacuation of a large quantity of indurated and lumpy fæces ;—simple means completed the cure.

2. A man about forty, having a very acute Case. ophthalmia in one eye, and mischief commencing on the cornea, was brought to me at the Ophthalmic Hospital by one of my colleagues. The patient had been treated in the ordinary way by leeches, cupping, and purgatives of a simple kind, and he had used a weak astringent lotion ; but the local symptoms continued unabated—the state of his tongue and mouth, and loss of appetite, with feeling of general depression, led me to direct five grains of calomel to be given directly, and in four or six hours after a draught of senna and salts ; and all other remedies (except tepid water to the eye), to be for the time abandoned ; he was to take light and simple food. The action of the medicine carried off large quantities of dark and highly offensive matter, his tongue became clean, his appetite returned, and the ophthalmia disappeared in a few days, the severity of the symptoms being speedily subdued.

3. I was called upon to attend two ladies, nearly Cases. at the same time ; they were almost of the same age, (about thirty,) and married. Each suffered from an acute attack of conjunctival inflammation, which had produced slight ulceration of the

cornea. One of the ladies had suffered from a similar disease the year before, and had been confined to her house for several months before it was subdued ; she had undergone great variety of treatment, principally of depletory kind, but little attention had been paid to dietetic means. The other lady had been a sufferer from the attack of ophthalmia about seven weeks before I saw her, and had been treated by leeching, blistering, common purgatives and various local applications, chiefly of a stimulating kind, and some highly so ; her sufferings had been severe. In each case there was an acute degree of inflammation of the conjunctiva, with profuse lachrymation, haziness and ulceration of the cornea, and some degree of intolerance of light :—both patients complained of restless and disturbed nights, clammy state of the mouth, and unpleasant sourish taste in the morning, with disinclination for food early in the day, but tolerable appetite for the principal meal ; some dryness of skin existed, and the circulation in each was rather hurried, but the pulse was not hard or incompressible.

Treatment.

I adopted the same plan of treatment for these patients, which consisted in allowing a plain nutritious diet, principally farinaceous, with milk, a moderate portion of plain animal food, and a glass of wine with water ; one grain of calomel

and three grains of blue pill were prescribed each night, and some compound decoction of aloes with tincture of senna and manna every morning, and after a few doses, the medicines were directed to be taken each other night and morning ; only tepid water was applied to the eyes, and some slight counter irritation was instituted by blisters behind the ears ; the irritation was not kept up, but repeated twice or thrice at a few days interval. The effect of the medicine caused the discharge of much offensive dark matter, and this mal-secretion continued in one case between three and four weeks, and in the other for nearly double the period. During the treatment, I invariably observed that the ophthalmia fluctuated according to the condition of the secretions from the alimentary canal ; it gradually subsided as the secretions assumed a more healthy aspect, and disappeared when their proper condition was established. The more protracted case resulted from disobedience in the dietetic part of the treatment, and evinced most clearly, its importance in combination with the medicinal remedies.

In cases of this class, the form of aperient must be determined by the cause or form of derangement ; thus simple accumulation will be relieved by active drastic medicine, as in the first case related ; mal-secretion with accumulation will be

Observations
on the treat-
ment.

best remedied by the medicinal and dietetic plan, which I adopted in the last described cases.

When there has been evidence of gastric disorder more especially, I have occasionally prescribed an emetic; the effect of this remedial agent as regards the inflammation of the conjunctiva is for the time prejudicial, and I have not found it so serviceable subsequently as to recommend it, unless unusual foulness of tongue and offensiveness of breath, with loss of appetite and uneasiness at the epigastrium, are not greatly mitigated by a dose of calomel followed by a black draught.

Functional disorder of the skin.

The sympathy existing between the cutaneous and mucous surfaces generally, is too well known and understood to need comment from me; it enables us readily to comprehend how the ocular portion of the latter may be influenced by disorder of the former; but although easily comprehended, such influence is frequently overlooked in practice. I do not allude to the cases, of frequent occurrence, in which the ophthalmia supervenes from sudden suppression or subsidence of cutaneous eruption—the cause and effect are then generally too obvious to escape the superficial observer—but I refer to those cases in which functional derangement of skin only exists, and maintains the ophthalmic disease.

General symptoms.

Under these circumstances the patient usually experiences aggravation of symptoms at night

when he is hot and restless, but at the same time the tongue may be clean, the bowels regular, and the appetite good ; the skin is heated and dry to the touch, and the local affection appears to be influenced by any sudden change of weather.

4. A young lady, about eight years of age, of delicate form, was lately brought to me by her medical attendant, in consequence of her having ophthalmia, not severe, but still productive of much suffering, and sufficient to prevent her from using the eyes even for purposes of amusement ; the affection had yielded in a degree to the use of leeches, purgatives, and a careful diet, but the relief had only been temporary. The obstinacy of the case under ordinary treatment, and a healthy condition of alimentary canal, induced the medical man to seek my opinion. I found that the only important deviations from her healthy condition was that her rest was disturbed, and that she was unusually hot at night, but this was attributed to the local disease, as, at the same time, she complained of increased pain or uneasiness in the eye. I was, however, satisfied that the local disease and rest were influenced by the defective cutaneous action, and I prescribed small doses of mercury with chalk and the compound powder of antimony at night, with an occasional mild aperient, a tolerably good diet, &c. ; in a few days the ophthalmia was gone, her rest had become quiet and

undisturbed, but at the same time the nocturnal heat and dryness of skin subsided, and the usual healthy moisture appeared.

Observations.

Such cases are common among children, and generally yield to small doses of mercury and antimony; but if obstinate, the use of a warm bath every second day, materially expedites the cure, by restoring cutaneous function. I rarely find simple ophthalmia so modified in the adult; but I have witnessed a few cases which have proved very obstinate, requiring several weeks' continuance of the compound calomel pill, or some analogous medicine, with the warm bath, and careful dietetic treatment, to effect a cure.

Functional dis-
order of the
uterus.

The influence of disordered uterine function over conjunctival inflammation of acute kind, was beautifully shewn in a case, which was in attendance at the Ophthalmic Hospital a short time since, and which I noticed in my clinical lectures.

Case.

5. A young woman, a Jewess, eighteen years of age, dark complexion, and stout made, presented herself for advice, having an attack of acute ophthalmia in one eye, with a small ulcer on the cornea; no important functional disturbance being detected, the common treatment of leeching, mild purgative, abstinence, and a lotion of a weak solution of acetate of lead was directed; a week elapsed, but no improvement took place; this induced me to make a more careful inquiry,

when I learnt that there was deficiency of uterine action; I therefore prescribed some steel mixture and an occasional aloetic purge. After six or seven days, proper uterine action occurred, and the ophthalmia disappeared, the ulcer rapidly healing at the same time.

Simple ophthalmia frequently exists with a Feeble power. condition of general power below the healthy or ordinary standard, and the local disease will not yield whilst this state of feebleness continues, but is so much dependant upon it, that the ophthalmia frequently subsides, as soon as general power is restored.

Very many cases of this kind result from over Causes of. depletion in treating the common acute disease; others are consequent on exhaustion from febrile disease; indeed, any circumstance, which reduces the constitutional vigor much below the healthy standard, will operate in maintaining this condition of conjunctival inflammation.

This form of disease might be considered by Chronic. some as of chronic character; but I cannot so regard it, for its general symptoms and appearances differ but little from those which I have pointed out as indicating the ordinary acute affection, whilst it differs essentially from those conditions which we recognise as chronic.

Some slight differences do, however, usually Difference of exist, but which would probably escape any symptoms.

except an experienced observer ; these are, in the number, size, and colour of the conjunctival vessels, which, when influenced by feeble power, are not so numerous ; are larger and more tortuous, and of darker colour, than in the disease previously described.

There is much more difference in the progress and consequences of the ophthalmia under these opposite circumstances, as to the developement of ulceration of the cornea, and its characters. In the common disease, there is an effort to repair the mischief ;—in that dependant on feeble power, no reparative attempt takes place. *See Ulcers of the Cornea.*

From over-depletion.

The most simple and frequent cases of this class are the result of over depletion, or too long a continuance of remedies which exhaust general power; we very frequently see such cases in consultation, and usually find the following symptoms :

Local symptoms.

The conjunctiva exhibits numerous vessels, filled with red blood, of a dark or purplish hue ; these vessels are very tortuous in their courses, and occupy the same positions as the principal vessels in the more acute form of ophthalmia, but they are less numerous, as well as more tortuous ; the palpebral division of the membrane is also usually more red than natural ; the organ is generally irritable, and the secretion abundant ; there is however less pain, less heat, and less

augmentation of suffering from the recumbent posture, than in common acute cases ; but the General symptoms. aspect of the patient, the paleness and look of depression, with coldness of extremities, and feeble, but often rapid pulse, the loss of muscular power, restlessness, and sometimes inordinate cutaneous action, evince the deficiency of power. *

The cure is in such instances easily effected by Treatment. improving the diet, and withdrawing the medicines which excite excess of secretion ; then, as the general power returns, the ophthalmia disappears. If the complaint has been of several weeks' duration, I generally use some weak astringent, as acetate of lead, or alum, locally ; but in most cases tepid water alone is directed to be applied to the eye or eyes, and that sparingly. In these cases, of long duration, I also give now and then, some mild tonic. I see a large number of such cases in consultation, resulting from too long a continuance of depleting measures, by which the disease may be prolonged often for weeks or months. The rapidity of cure which often follows the adoption of the means I have recommended, excites the wonder of the patient, and gives him a high opinion of the ability of the surgeon who directs them.

I occasionally see cases of this class, which Severe cases. present most of the local symptoms in a superlative degree, the heat being great, the pain severe,

and continued, and aggravated by the recumbent posture ; the redness general from the extensive injection of vessels with red blood, and sometimes slight swelling or thickening of the membrane, and also a little tumefaction of the palpebræ—besides, there is, in most instances, ulceration of the cornea ;—how, it may be asked, then, does it differ from ordinary acute ophthalmia ? 1st. In the color of vessels, which are of purplish tint ; 2nd, in the courses of the larger vessels, which are more tortuous ; 3rd, in the condition of the ulceration of the cornea (when it exists), which does not evince any disposition to heal or fill up. *See Ulcers of the Cornea.*

The following case affords an excellent illustration of this subject :—

Case.

6. A physician of deserved repute in the metropolis, brought one of his sons to me; the boy was about eleven years of age and well grown ; he had suffered for some weeks from ophthalmia, for which he had been treated entirely in a manner calculated to exhaust his general power—as by low diet, purgatives, calomel, leeches, blisters, &c.; but he appeared rather to get worse than better, though in the commencement of the treatment he had derived much relief. On examining his eye, I found the conjunctival vessels fully distended by a dark and purple coloured blood, a large superficial ulcer at the

upper part of the cornea, partly opaque, and partly transparent; the opacity did not, evidently, result from deposition of fibrin, and I found had been caused by a recent application of solid nitrate of silver; the ulcer then shewed a want of proper or healthy action; the palpebræ were slightly swollen, and of a dull red colour, near the ciliary or free margins; the heat was considerable, the lachrymation profuse and scalding; the pain continued and acute, and exposure to light much increased his distress. The colour of the conjunctiva and palpebræ, and the state of the ulcer, caused me to extend my enquiries, and to discover cold extremities, pallid surface, small, quick, and feeble pulse, with feeling of weakness and depression. I directed a good diet, animal food and porter, sulphate of quinine, with infusion of roses, and a little additional acid (in consequence of disposition to sweating), with an occasional mild aperient, if required, and the application of tepid water to the eye for a minute, three or four times in the day. I had some difficulty in persuading the father to adopt this treatment, in consequence of the severity of the local symptoms, but my positive assurance that I should immediately commence it, if the patient were my own son, decided the point.

A good wholesome meal, I believe, began the change, and the whole plan was attentively fol-

lowed up, and with such success, that in ten days the boy returned to school, having merely a small opake spot at the upper part of the cornea, the cicatrix of the ulcer. The effect of the general treatment upon the local disease was beautiful, for as the patient's power began to improve, the severity of the local symptoms began to subside, and as the general health was gradually restored, so the local disease gradually vanished.

Remarks.

It is not common to find the local symptoms so severe, as in the foregoing case, when the general power is much below par; but cases of this kind, with somewhat less urgency of local disease, are so frequent, that a month rarely elapses without my seeing one or two. I have witnessed this modification of ophthalmia in persons of all ages, but most frequently in the young and old, and especially in such as have been reduced by some previous illness; thus it is common in children after measles, scarlatina, small-pox, &c., and in elderly persons after ordinary fever, &c. Indeed, such constitute a very large majority of these cases.

Case.

7. A very stout man, aged fifty-two, a butcher by trade, came to the Ophthalmic Hospital on the 18th of October, 1839, having suffered from inflammation of his eye for three weeks; he complained of severe pain in his left eye, with heat, profuse discharge of tears, which was hot or

scalding, tenderness of the eye, and some intolerance of light. The eye appeared very red and irritable, the vessels of the conjunctiva were numerously injected with red blood, but of a dark or purplish hue, an ulcer existed at the upper and outer part of the cornea, and it was nearly transparent; the dark colour of the conjunctival vessels, and more particularly the indolent state of the ulcer, induced me to examine the patient attentively, when I discovered a very feeble condition of circulation, with cold extremities; his secretions were regular, but his appetite was bad, and his rest disturbed, the local symptoms being aggravated at night. I prescribed one grain of calomel and six of Dover's powder each night, some infusion of roses with Epsom salts, occasionally, as an aperient, and five grains each of powdered bark and dried carbonate of soda, every six hours; locally, a blister behind the ear, and poppy decoction to bathe the eye with; I told the man to take a plain good diet, and a pint of porter daily. On the 22nd he was much improved, and his sufferings had nearly subsided. On the 5th of November all appearance of disease was gone, but the ulcer, which filled up very slowly. I then directed him to leave off all mercurials, but to take the aperient mixture occasionally, and continue the bark and soda, and, in addition, to have a drop of a solution of nitrate of silver,

one grain to an ounce of water dropped into the eye daily: he soon got well. The patient had not previously suffered from any affection of his eyes; and attributed the attack I treated him for to the influence of cold and damp.

Peculiar condition of debility.

The most troublesome and obstinate cases of simple ophthalmia, which have come under my observation, have been connected with some peculiarity of system, independent of any important functional derangement.

The local disease has, in these instances, presented the symptoms and appearances which I have first described; it has been principally confined to the ocular division of the membrane, and has, in most of the cases, extended to the cornea, producing slight superficial ulceration; further, the attacks of pain have been more severe than in the ordinary disease, and the organ more irritable; considerable intolerance of light has also existed, especially during the attacks of pain, which have had a neuralgic character.

Symptoms.

The general peculiarity has consisted in an extreme feebleness of circulation, the pulse being quick, undefined, and so weak as to stop from very slight pressure; pallor, coldness, and loss of muscular power have afforded further proof of the low condition of vascular action.

The patients who have suffered from this form of disease, have all experienced intervals of relief

from suffering and irritability of the eye, though it has still remained red and weak, and on careful observation, such intervals of relief, have been often found to arise, from some atmospheric change, which has been favorable to the health of the individual.

The treatment which I have pursued with these patients has been principally directed to the promotion and maintenance of general power, by diet, exercise, clothing, and medicine, but with the utmost care and attention, I have experienced much difficulty in effecting a permanent cure.

8. One of the first cases of this kind which I ^{Case.} recollect was in a gentleman, about forty years of age, who was engaged in one of the principal banking-houses of the metropolis; he had suffered for above three years, before the period of his consulting me, and had been under the care of most of the medical men of London who had directed their attention to ophthalmic diseases, but he had not obtained more than an occasional mitigation of the disease. After going through the history of the treatment he had undergone, I was much puzzled what course to pursue; for he had tried almost all varieties of general and local remedies. I could not detect any important functional derangement, but only a want of general power in the action of the heart and

arteries ; he expressed a feeling of weakness, but attributed it to the medical discipline he had undergone. The ophthalmia was not very severe, it affected both eyes, and was attended with much irritability of the organs ; but it did not altogether incapacitate him from attending to his duties in the banking-house, though it produced a good deal of suffering and distress, and compelled him occasionally to give up business for some days together. The disease was much influenced by sudden change of weather, from dry to wet. I directed my treatment principally to improve and maintain the state of the circulation by attention to the secretions, a good and generous diet, and warm clothing, with the use of tonic medicine, which I varied the form of frequently, making a change whenever the form in use became offensive to the stomach, or failed in producing the desired effect. Yet with every care and attention I could not effect a cure ; though I succeeded in getting rid of much of the irritability, and kept off any serious relapse, so that he could attend to his business with comparative comfort. After he had been under my care for several months, he, by my advice, consulted my colleague, Dr. Farre, who strongly urged a change of climate for a few months, as he considered that it afforded a prospect of a more decided and beneficial change in constitu-

tional vigor; and, as I warmly supported the opinion of Dr. Farre, the patient made arrangements for an absence from business for three months, (the summer being at the time a little advanced,) and soon left England for the South of France; before, however, he arrived there, he experienced a beneficial change, both in the local complaint, and in general health or strength; and after a few weeks' residence in the South of France, he perfectly recovered, and much enjoyed the remainder of his holiday in wandering about; he returned to England at the end of the three months, in excellent health, and almost without trace of the ophthalmic disease. Many years have since elapsed, but I believe that he has not had any return of the disease of the conjunctiva.

9. A case very similar has been lately under my case. care, occurring in a younger subject, about thirty years of age. The ophthalmia affected only one eye, and had produced slight ulceration of the cornea; it had existed above two years when I was first consulted, there had been frequent change in the degree of inflammation and suffering; sometimes, he experienced but little inconvenience; and, at other times, he had great irritability of the organs with much acute pain, and intolerance of light, so that he could not use the sound eye; anything which depressed his

general power, occasioned a relapse, as sudden change of weather from dry to wet, gastric or hepatic derangement, violent action of aperient medicine, over exertion, &c. &c. I prescribed a generous diet, with moderate use of stimulus, to which he had been previously accustomed ; warm clothing, gentle exercise, and tonic medicines, as sarsaparilla, cusparia, ammonia, steel, zinc, &c. I was particularly attentive to the condition of the principal secretions, and was obliged to give an occasional mild aperient, as colocynth and henbane, with now and then, a few grains of blue pill, or mercury and chalk.

In the course of two months, or rather more, he twice appeared to be well, the eye becoming clear of red blood, all pain, irritation, and intolerance subsiding, but each time a few days only passed in comfort, when a fresh attack commenced from very trivial causes. I then advised change of air, and the patient with his family went to a dry inland position, and there again, under a continuance of the same plan of treatment, he got apparently well ; but again a fresh attack occurred after a few days of relief. He then yielded to my solicitations and went to the continent, where he remained between two and three months, and returned much improved in general power, and with very slight ophthalmic complaint, and this has since disappeared, but

he has kept in the neighbourhood of the coast, out of the way of business; many weeks have now passed without any relapse, and several since the eye became free from all signs of inflammation. I believe that, with care, the cure will be permanent.

The following cases have since been under my care.

10. A gentleman about thirty-three years of Cases. age, had suffered from this distressing ophthalmia above five years; he continued, however, during that time a business which required much attention, and was productive of anxiety. After a full and fair trial of a plan of treatment, similar to that adopted in the cases I have described, from which he obtained decided good, (for his suffering was greatly lessened, and his relapses less frequent and severe,) still morbid action continued; he went to France and Germany in the summer of the year 1837, and after an absence of six weeks, (which was all the time he could spare,) he returned free from local affection, and with considerable increase of constitutional vigor: he then immediately engaged in much pressing and anxious business, in a large provincial town, where he had previously resided for many years, and after a few weeks wrote to me in consequence of the re-appearance of his old enemy;—the disease has not assumed so

severe a character, and is readily mitigated by a mode of treatment similar to that formerly adopted. The patient has resolved to try another continental trip of longer duration next summer, and I think with a good prospect of obtaining a permanent cure.

Case.

11. Another patient, twenty-two years of age, and of very delicate make and feeble power, also with marked strumous diathesis, had been afflicted with ophthalmia for several years, which baffled the skill of many of the most experienced ophthalmic surgeons in England and Scotland, but which subsided entirely, after a short residence in the East, where he had obtained some official appointment: he remained free from relapse, during his residence there for many months; but very shortly after his return to England, and taking up his residence with his family in London, he experienced a return of his old complaint. I saw him then, for the first time, and succeeded in subduing the disease in a few days, but he has since had another sharp attack, from which he has just recovered, and is about to leave town for a dry and warm country residence, as the best means he can at present adopt, to keep off the local disease.

Remarks.

I have seen many cases of this kind of shorter duration, and a few of equal duration, to some which I have detailed; and I have effected a

cure in the majority by a steady perseverance in treatment, calculated to improve and maintain a proper degree of general power. In all, I have found it necessary, occasionally, to change the form of tonic medicine, and have obtained the greatest benefit from those of metallic quality, as the sulphates of iron, zinc, and copper, in very small doses; also from iodine and hydriodate of potash combined with sarsaparilla or some mild bitter, and the preparations of bark, quinine, &c.

I consider all such cases curable by patience and perseverance in treatment, on the principle I have mentioned, but am confident, that great, very great advantage results from a decided change of residence or of climate, provided that such change affords a dry and warm atmosphere.

I have found cases somewhat analogous in the practice of general surgery; for instance, inflammation of the ligaments, or synovial membrane of a joint, of the mucous membrane of the urethra, of the vagina, of the nose, &c., &c., existing with a feeble state of general power, and resisting treatment until aided by change of air, when the cure has in many instances been easily effected.

Analogous cases in general surgery.

The sole important consequence of simple Consequences, ophthalmia, is affection of the cornea by ulcer-

tion ;—this subject will however be considered separately.

Combinations. The conjunctiva is implicated in any active disease which attacks either one, or all of the important structures of the globe, or its appendages, but more especially does it become affected in conjunction with such textures as have direct vascular connection with it, as the cornea and sclerotic, or nearly so, as the iris, choroid, and aqueous membrane ; the inflammatory action in this membrane is indeed often so severe, that it forms the most prominent feature of the case, and so obscures, or takes attention from deeper seated and more important disease, that an inexperienced or superficial observer overlooks it, and serious mischief results before it is recognised.

OF PUSTULAR OPHTHALMIA.

INFLAMMATION of the conjunctiva, with formation of perfect or imperfect pustules. **Definition.**

Ophthalmia pustulosa,—conjunctivitis pustulosa,—ophthalmia phlyctœnodes. **Synonyms.**

It commences with a pricking or darting pain Local symptoms. in the eye, as from the presence of an extraneous body: the sensation varies much in intensity, according to the acuteness of the disease; it is principally experienced on sudden movement of the palpebræ, or globe, and arises from a partial distension of the conjunctival vessels, or the formation of a pustule or pustules, by which a part or parts of the membrane become elevated above the natural surface. There is usually a morbid secretion which coagulates and collects at the inner canthus, and on the cilia, during sleep, and causes the lashes to adhere together; the secretions are altogether more abundant than usual, and sometimes profuse; in simple cases there is not any intolerance of light.

In most cases the conjunctiva exhibits a partial Appearances.

increase of vascularity. A plexus of vessels, carrying red blood, becomes apparent, in one or more parts of the ocular portion of the membrane; but, otherwise, the membrane possesses its usual and healthy aspect; each plexus of red vessels has a conical figure, the base of which is opposed to the orbit, and the apex to the cornea, and the point of the cone is generally situated immediately over the junction of the cornea and sclerotic; to this point the vessels converge, and it is the most elevated part; then a small quantity of fibrin is soon deposited, and in the centre of the fibrin sometimes pus is formed, and becomes discharged through the apex of the swelling by ulceration.—(*See plate 1, fig. 2.*) We may then find the pustule forming, formed, or ulcerated. Sometimes, though seldom, the pustule or pustules form over the sclerotic, at a short distance from the cornea, and occasionally, but very rarely, over the surface of the cornea. In very mild cases, one or two pustules only are found, but in the very acute form of the disease, the number of pustules sometimes is so great, that the plexuses are no longer to be distinguished, but being blended together, they give a general red appearance to the membrane, as in acute simple ophthalmia. I have seen the whole of the corneal circumference studded with pustules in different stages of progress.

In very feeble subjects, a true or perfect pustule does not form, but an imperfect pustule or vesicle is developed (*phlyctenula*), when the visible conjunctival vessels are less numerous, and of a darker color, than in ordinary cases.

The palpebral division of the conjunctiva is always more red than natural, and slightly tumid, and the meibomian secretion is augmented, and some of it, coagulated, may be usually seen at the inner canthus, and sometimes on the cilia.

This disease appears to be produced, by exposure to cold and damp, especially when sudden change of temperature occurs; and frequently results from some atmospheric peculiarity, for it is often epidemic, and, especially so, during the spring and autumn of our climate.

The disease is confined principally to children, Persons liable to. being rare in adults; and most frequently attacks the fair and feeble subject;—a child once affected with it, is liable to further attacks, and some children suffer from it, once or twice a year, for years in succession.

It is modified, as the simple ophthalmia, by Modifications. important functional derangement, more particularly of digestive organs, and of skin; but most frequently by a deficient degree of general power, or by a scrofulous diathesis; it is common after febrile disease in children, as measles, scarlatica, &c.

Treatment. Most frequently, very simple treatment speedily subdues this disease—as a moderate diminution of diet; a mild purgative, the application of a weak astringent lotion of acetate of lead, or of alum, with the use of a mild ointment to prevent adherence of the eyelashes; and rest of the organs. I have repeatedly known the ophthalmia subdued in two or three days by such means, but, in acute cases, a more active plan is required, as local bleeding by leeches, greater abstinence, and medicine to act on the principal secretions more freely; but the general power must be watched, and not allowed to get much below par, which it is apt to do, under a continuance of the treatment recommended, in most children liable to this disease;—but, on the other hand, the diet must not be increased too rapidly, or exercise of the organ be permitted too early, for relapse may be easily produced.

I have frequently seen this affection treated at an early period, by the application of a solution of nitrate of silver, of one, two, three, or four grains to an ounce of distilled water, and, in many instances, with marked good effect, the cure being rather more rapid than by the plan of treatment which I have described;—I have also more frequently seen this stimulating remedy fail, when the cases have been afterwards more protracted and obstinate.

It is, in my opinion, a very uncertain remedy, and as the disease is usually so easily and quickly relieved by the more simple and less severe plan, I cannot recommend the use of the nitrate of silver.

When the general power has been too much reduced by over depletion, or when the disease occurs in a patient, debilitated by previous disease, or exhaustion, the pain is less severe, but the secretions more abundant, though thinner, and the eye rather irritable ; the vessels apparent in the conjunctiva are less numerous, more tortuous and darker coloured, though still disposed in a conical figure ; the pustules are not perfectly formed, but a slight deposit of whitish fibrin occurs, and a very thin puriform deposit, or serum ; so that the elevation has more the character of vesicle than pustule, and when this vesicle gives way, there is not an effort to repair the mischief, but the opening extends by ulceration.

The want of power is evidenced by the same general signs that have been described, as occurring in connection with an analogous form of simple ophthalmia.

This sub-acute form of pustular ophthalmia is frequent, after severe or protracted febrile disease, attended with cutaneous affection, as measles, scarlatina, cow-pox, &c., &c., much more so than

the simple form of the disease ;—the worst cases, that I have seen, have appeared with, or rather subsequent to, the acute stage of small-pox, and, in such cases, more particularly, I have found the imperfect pustule and ulceration on the cornea.

Treatment.

The principle of treatment should be the same as in the similar condition of the simple disease ; only, that there is more necessity for the local use of mild astringents, or stimulants, to aid in promoting a healthy local action.

Other modifications.

The modifications of the pustular disease, by disorder of digestive organs, or by disturbed cutaneous functions, or those of any other important organ, resemble, in every respect, the modifications of the simple ophthalmia, under similar circumstances ; they are to be detected in the same manner, and to be subdued by similar treatment ; so that I deem it unnecessary to make further comment here.

Consequences.

The consequences of pustular inflammation are similar to those of the simple form of disease ; but mischief to the cornea is rare, in the former instance, in comparison with that which occurs in the latter.

Combinations.

The pustular disease is frequently combined with the catarrhal, and occasionally with the catarrho-rheumatic or conjunctivo-scleritis.

OF CATARRHAL OPHTHALMIA.

INFLAMMATION of the conjunctiva, with a viscid definition. mucous secretion.

Ophthalmia conjunctivitis catarrhalis,—oph-^{Synonymes.} thalmia mucosa,—blepharo-conjunctivitis catarrhalis,—conjunctivitis puro-mucosa vel atmospherica.

Heaviness and stiffness of the palpebræ, a sensation as if grit were in the eye, otherwise a dull pain, which becomes increased towards night, profuse lachrymation, the tears being hot or scalding, and a discharge of opake viscid mucous, which collects on the cilia, and firmly agglutinates them during sleep,—all the symptoms become aggravated in the evening, and the patient then also usually experiences head-ache, and pains in the orbits.

Frequently there is little or no accompanying constitutional disturbance, but sometimes all the symptoms of catarrhal fever are present, as lassitude, chilliness, with febrile excitement at night,

a quick circulation, hot and dry skin, thirst, and restlessness.

Appearances. The surface of the globe is suffused with secretion, which, accumulating, drops or flows over the lower lid to the cheek; the cilia are partly loaded with coagulated matter, white, or of a very light yellow color, and a small quantity of similar secretion is usually collected at the inner canthus. At first, the palpebral conjunctiva, the semilunar fold, and caruncle, become florid, thickened, and villous; and, soon afterwards, the ocular portion of the membrane participates in the disease, and assumes also a red, tumid, and villous aspect; the color of the membrane has a pink or carmine tint, and is more uniform than in simple ophthalmia, but still the vessels can be readily distinguished on close inspection; the ocular part of the conjunctiva, above the sclerotic, is usually somewhat elevated around the cornea, by deposit of serum or fibrin, in the subjacent cellular tissue, (constituting chemosis); and the surface of the affected membrane has particles of thick mucus adherent to it, and some quantity may be always found between the lower lid and the globe, in the reflected part of the membrane. In severe cases the palpebræ become tumid and red.

Causes.

The most frequent cause is atmospheric; and

the disease is therefore usually epidemic, and mostly prevalent during spring and autumn ; but the disease may be propagated by contact of the morbid secretion.

It occurs at all periods of life.

Persons liable
to.

It is modified, as the diseases previously described, by important functional derangement, by condition of general power, by the general catarrhal affection, when it exists, and by the state of the atmosphere.

When unaccompanied by general disturbance, Treatment. or important functional derangement, the catarrhal ophthalmia yields readily to the plan of treatment advised for the cure of pustular disease ; but, in the former case, the general remedies may be more active in the commencement ; and locally, the solutions of alum or acetate of lead, besides being employed rather stronger, should be warmed before applied.

I usually prescribe poppy decoction with alum, (one pint and one drachm,) as a lotion to be used tepid, every two or three hours.

Local bleeding is more frequently required in the catarrhal affection.

As the severity of the local disease subsides, the local applications should be gradually increased in strength, and a weak form of the citron ointment should be substituted for the simple unguent ; this change tends very much

to secure the patient from a chronic stage of disease.

I much object to the employment of cold lotions in the catarrhal disease, and even to the long continued, or very frequent application of warm or tepid liquids ; and always direct that the palpebræ shall be carefully dried with soft linen, after the use of the warm lotion,—my reason is, that I have often known cold and moisture to excite inflammation in the sclerotic, and thus render a simple disease compound and formidable.

Important functional derangement may be detected and remedied, as already explained. *See Simple Ophthalmia.*

When catarrhal fever exists with the local disease, the latter very rarely subsides before the former is subdued, although it may be mitigated by the local treatment which I have directed ; attention should therefore be given to both, but principally to the constitutional affection ; when the febrile action is severe, with a full, hard, and firm pulse, general bleeding may be advantageous ; but otherwise, abstinence, active aperients, and small doses of mercury with antimony, or ipecacuanha, as a diaphoretic, will suffice ; the local means may be employed at the same time, and the ophthalmia will generally disappear soon after the general disease has been subdued, un-

less the patient has been too much reduced by the general disease, or by treatment ; in which case a chronic state of inflammation will nearly always result ; or, if the disease occurs in a person with feeble general power, the acute stage is of very short duration, and the affection soon becomes chronic.

Sometimes the acute stage of the disease proves obstinate, and I have occasionally thought this has arisen from a continuance of exposure to an unhealthy atmosphere, and have therefore induced such patients to change their residence for a short time, and, generally, with good effect.

Catarrhal ophthalmia seldom produces any serious mischief to the organ ; for the cornea rarely becomes affected, unless under a long continuance of the chronic stage of the disease, which stage is the most serious result of catarrhal inflammation.

As I have previously observed, the catarrhal affection often appears with the pustular : indeed, the latter, nearly always, has some symptoms which render it closely allied to the former : and further, catarrhal inflammation of the conjunctiva is often combined with inflammation of the sclerotic, making a compound disease of important character.

Chronic catarrhal ophthalmia is similar to the chronic purulent disease, and requires a similar

stage.

of the chronic

plan of treatment; so that I shall consider both together. *See Chronic Purulent Ophthalmia.*

Strong local
stimuli.

I much object to the use of strong stimulating applications to the eyes, in catarrhal ophthalmia for the reasons which I have expressed in connection with the subject of pustular ophthalmia. The catarrhal disease is usually very tractable, and does not require severe remedies to subdue it.

OF PURULENT OPHTHALMIA.

INFLAMMATION of the conjunctiva, attended with Definition.
a secretion of pus.

Ophthalmia purulenta,—Ægyptian ophthalmia, Synonymes.
—gonorrhœal ophthalmia,—ophthalmia neonatorum.

I have placed as synonymes, terms which are employed by many other ophthalmic authors, to denote what they appear to consider as distinct diseases ; but I am satisfied that the inflammation of the conjunctiva, attended with a purulent discharge, although described as existing in various forms, is virtually the same, in all instances ; only modified by circumstances of age, climate, mode of origin, &c. I shall, therefore, only make such a division of the subject, as I deem requisite for practical utility ; but I shall not neglect to notice the divisions adopted by others, when considering the modifications of the disease.

I shall, then, divide my subject into two parts, and, first, describe the purulent ophthalmia of the adult ; and, secondly, that which occurs in

the infant: not that I regard them as distinct diseases, but solely because, from the conditions of the patients, some difference in treatment is requisite.

OF PURULENT OPHTHALMIA IN THE ADULT.

THE complaint begins with an itching and irritation about the margins of the lids and canthi ; ^{Local symptoms.} a sense of weight and stiffness in the palpebræ ; and a feeling, as of fine sand, between the conjunctival surfaces ; the secretions are in excess, the tears fall over the cheek, and the cilia become loaded and adherent, with a viscid secretion, which coagulates upon them : after a short time, the patient suffers from an acute and continued pain in the eye, with a sense of great fulness, or tension, in the organ ; the pain extends to the forehead and temple, and a copious discharge of purulent secretion takes place.

When the pain is continued, and the suffering ^{Constitutional symptoms.} of the patient severe, irritative fever arises, and increases in proportion to the severity of the local disease. The first general symptom is an augmentation in the force and frequency of the action of the heart and arteries, which is quickly followed by general nervous excitement, and derangement of some of the other most important functions.

Sometimes, general febrile action is developed at the same time as the local disease, and is of acute catarrhal kind.

Appearances. At first, the cilia are found loaded with a coagulated secretion, of light color, and adhesive quality, and a quantity of similar secretion usually collects at the inner canthus ; the palpebral conjunctiva, the semilunar fold of the membrane, and the caruncle, are swollen and red ; the vessels being filled with blood of a brilliant carmine color, the membrane itself being thickened : the surface of these parts, instead of being smooth and uniform, presents a villous aspect, as that of the mucous surface of a finely injected foetal stomach. The thickening and elevation of the conjunctiva is sometimes so great, that it protrudes through the palpebral opening, and, under sudden action of the orbicularis muscle, causes an eversion of the lids.
(ectropion.)

In the next stage, the ocular or sclerotic division of the membrane becomes affected, and quickly assumes a general bright carmine tint ; its surface also becomes villous, and the membrane thickened. Upon the surface of the affected parts of the conjunctiva, in various spots, some thick purulent secretion may be observed, and if this be cleansed off, a fresh deposition soon takes place. The conjunctival

vessels are, at first, easily to be distinguished, but, as the disease advances, they become indistinct. Further, the thickening of the membrane increases, and effusion of serum, or fibrin, takes place into the subjacent cellular tissue on the globe, so that the ocular part of the conjunctiva, which covers the sclerotic, becomes elevated around the cornea, (*chemosis*); (*see plate 1, fig. 5.*) first, generally at the lower part, but it soon extends to the entire circumference; at the same time, the textures of the palpebræ participate in the inflammation, and the lids are rendered red, swollen, and painful; the secretion of pus is also greatly increased, and it assumes a deep yellow color, and, frequently, has red particles of blood mixed with it. Eventually, the palpebræ become excessively swollen, tense, and of a bright florid red color, as in erysipelas, and the patient cannot separate them; but if this can be forcibly done, the chemosis, or elevation of the ocular part of the membrane, around the cornea, will be usually found to be complete, and the cornea itself, in part, or altogether, hazy, or opake, and afterwards dull in appearance, being incapable of reflecting the light, as it naturally does.

When first the cornea becomes hazy, its brilliancy is not disturbed, and, I believe, that the nebulous aspect results from a deficiency of the

inter-laminar fluid, the secretion of which becomes arrested under the impeded circulation of the part; this change indicates commencing destruction of the cornea, and it soon loses its vitality, or mortifies, in part, or in toto.

Almost as soon as mortification of the cornea has taken place, the violence, or severity of the disease abates; the lids lose their tension, and bright shining florid red color; they still remain swollen in a minor degree, but the surface becomes dull, and the color a dusky red or purple; (*see plate 1, fig. 6,*) the secretion loses its deep yellow tint, and becomes whiter and thinner, and the local suffering is greatly diminished—thus, the destruction of the eye, for visual purposes, being accomplished, the disease subsides.

The mode in which the cornea is destroyed is as follows. The principal supply of blood to this texture, is through the vessels of its conjunctival covering, as may be distinctly seen in some morbid conditions of these structures (*see corneitis, and vascular cornea, from granulated lid, or strumous ophthalmia,*) for, the larger vessels ramify in the conjunctival layer, and send minute branches to the texture of the cornea. The occurrence of chemosis, or elevation of the conjunctiva covering the sclerotic, around the margin of the cornea, by rapid deposition in the sub-conjunctival cellular membrane, first im-

pedes, and, then, altogether interrupts the circulation in the corneal portion of the membrane; and this arises from the pressure, at the margin of the cornea, by the deposition, and from the tension and displacement of the membrane; for the attachment of the conjunctiva, over the junction of the cornea and sclerotic, is so firm, that it undergoes little or no change, whilst rapid and extensive alteration takes place in the membrane around—but its organization is so delicate, that the circulation is easily interrupted, by the combined effects of pressure and tension.

The cornea does not mortify from an extension of inflammatory action to it, but solely from interruption to its supply of nutritious fluid. Mortification of the cornea commences in various parts of the structure; most frequently near the margin, sometimes near the centre, or between the centre and circumference: in the first position, if the disease be arrested, the slough is usually of a crescentic figure, following the margin of the cornea; in the other positions, under similar circumstances, the slough is generally round or oval.

Just previous to the occurrence of mortification, the whole of the cornea generally appears hazy or cloudy; but this haze or cloud is most dense at the part at which mortification subsequently takes place;—during the state of gan-

grene, the conjunctiva remains moist and shining, but as soon as a part has lost its vitality, the conjunctiva which covers the mortified part, loses its brilliancy, and becomes dull ; and, as soon as the mortification stops, or is arrested, a well defined line bounds the mortified part, and the other portion of the cornea quickly regains much of its healthy character and transparency : —the partial mortification of the cornea usually extends over one half of the entire texture, and frequently more; but, occasionally, not more than a fourth part of this important structure is destroyed—the mortification, also, generally extends through all the laminæ, so that, when the mortified part sloughs off, the anterior chamber is opened, and the iris, in part, prolapses :—we never however find, in these cases, that the destruction of the deep laminæ is so great as of the superficial ; and perhaps, this depends upon the inner laminæ receiving some supply of blood, from the vessels of the membrane of the aqueous humor. It rarely happens, that the cornea suffers by mere ulceration, (as in simple ophthalmia,) from the acute purulent disease ; —we do, now and then, find small depressions, resulting from loss of substance, after the acute stage has passed by ; and these may be, sometimes, the result of pure ulceration ; but, I believe them most frequently to be occasioned by

the separation of a small slough or mortified part, which often takes place with great rapidity.

If the disease has produced partial destruction of the cornea, the dead part soon separates, when the acute stage subsides, but if due care be not taken in patients of feeble power, or in those much reduced, by the treatment adopted to check the acute symptoms, further destruction takes place of the cornea, solely from want of power in the part ; the surface exposed by the separation of the slough, assumes a dull and dirty brown color, and becomes opake ; this part is soon thrown off, and the surface, next exposed, undergoes the same change, and is separated ;—and, thus, by a succession of very thin sloughs, the excavation becomes augmented. Previous to the formation of these dark sloughs, and on the separation of the first mortified part of the cornea, the depression which is left, is generally clear and transparent,—but, in those cases, in which an adequate degree of power exists to repair the local mischief, the depression presents a light grey or whitish aspect ; and this extends also to the surrounding parts, forming a thin nebulous halo around the excavation.

When the thin dark sloughs are forming, the discharge is thin and whitish, the conjunctiva lax, and of a dull pink color, and the lids remain

tumid, but not tense, and of a dark purple hue ; —the aspect of the patient, and the state of the circulation, indicate great general debility ; but, nevertheless, the local pains are sometimes severe.

Causes.

Purulent ophthalmia in the adult, in this country, is most frequently of specific origin, and results from the contact of purulent secretion ; either from the urethra, vagina, or conjunctiva ; but, I have known it often to arise, from exposure to cold and damp ; also, from local violence ; and I have seen some very severe cases with small-pox, scarlatina, measles, erysipelas, &c. &c.

The very severe form, which has been so prevalent in our army and navy, and which first appeared among our troops in Egypt, resulted, I believe, from exposure to vicissitudes of temperature, probably combined with some peculiar atmospheric influence, operating on persons enfeebled by exposure, irregular living, and fatigue. Several who have experienced the disease, and many who have had opportunity of seeing a great deal of it, have stated to me, that they considered it as a very severe form of catarrhal inflammation. Among those who have expressed this opinion to me, I feel gratified in mentioning Clot Bey, whose intelligence and tact in observation, entitle him to our confidence ; and in such opinion I fully concur. The disease,

once developed, is easily propagated among persons associated closely together, and occupying confined apartments ; it may, in my opinion, be then communicated by actual contact of morbid secretion, or by atmospheric influence, the air becoming tainted, where many affected parties are confined to a limited space.

I have mentioned the contagious nature of the disease without reserve, because I am perfectly satisfied of its being frequently produced by application of matter from a purulent eye, and from the urethra ; I also believe that the puriform or purulent secretion from the vagina, and perhaps other unbroken mucous surfaces, might also produce the complaint ; and I am induced to think so from knowing that a puriform or purulent discharge from the vagina, will, by contact, induce the purulent ophthalmia in the infant, and gonorrhœa in the male.

Those who have witnessed this terrible disease, in the army and navy, or in some of the large schools or workhouses, cannot, I think, doubt its contagious property. I know that there are many persons sceptical on this point, and I cannot but consider such persons as either deficient in experience, or determined not to be convinced.

Some suppose that the purulent ophthalmia, resulting from gonorrhœa, is by metastasis ; because, occasionally, the urethral disease loses

its acuteness, or is decidedly mitigated, during the prevalence of the ocular complaint ; I believe this opinion to be erroneous, for the gonorrhœa is, in most instances, but little changed when the ophthalmia commences, though it usually lessens, and sometimes disappears entirely, under the treatment requisite to subdue the disease of the conjunctiva ; so we often observe gonorrhœa to be influenced by other local diseases or injuries, which more particularly engage the vascular system ; and if active treatment be required to remedy such disease or accident, the gonorrhœa sometimes disappears during the treatment. I consider that the gonorrhœa is influenced in a similar manner, by the treatment of the purulent disease of the eye.

There is a metastatic disease of the eye connected with urethral disorder, which I shall hereafter describe.

It is further supposed by some, that the gonorrhœal ophthalmia attacks only the male : this again is an error, for I have seen many cases in females.

Persons liable to. Though I have headed this division “Purulent Ophthalmia in the Adult,” I intend it to apply to all ages, except infants of a few weeks old ; and all, from the infant to the very aged, are liable to be attacked by purulent ophthalmia.

Modifications. The principal modifications of this disease

result from its mode of origin ; from the age, and constitutional vigor of the party affected ; and from the existence of fever, or other severe constitutional disturbance at the same time.

Thus, when the local affection is idiopathic, or is induced by violence, or results from the contact of matter, and the patient is free from constitutional disorder,—the specific form, or that from application of morbid secretion to the conjunctiva, is very severe, and proceeds to the destructive termination much more quickly than the others. Most frequently under these circumstances, one eye only is affected at first, and, though the second rarely escapes altogether, yet many days often intervene between the developement of the complaint in the two.

If it arises from exposure to cold and damp, it is often attended with acute febrile symptoms, of catarrhal character, and, then, under the excited condition of the vascular system, the local disease proves severe and rapid in progress, and it usually attacks both eyes. Further, when it occurs with any of the acute febrile diseases, as small-pox, measles, scarlatina, &c., it is, generally, formidable and destructive.

The only difference, then, worthy of notice, is in the intensity and progress of the ophthalmia ; but it is important to be acquainted with the principal circumstances which modify it, in this

respect, in order that we may be on our guard, and not neglect the commencement of an attack.

Treatment.

In describing the treatment of this disease, I shall first consider it as existing without constitutional disturbance, or as a purely local affection ; and as presenting three stages.

1. That without chemosis, or swollen palpebræ.
2. That with chemosis, and swollen palpebræ, but a clear cornea.
3. That in which mortification of the cornea has taken place.

There is not anything in the aspect of the first stage of the complaint to create an alarm in the mind of any one, who has not seen much of this terrible affection, and, therefore, the most simple remedies alone are frequently resorted to : such, however, is the frightful rapidity with which the disease passes from this stage to the destructive termination, that in the lapse of twenty-four hours, in some instances, the mortification of the cornea is complete ; and the medical attendant, who has left his patient, on one day, with what he considered as an unimportant ophthalmic affection, is horror-struck, on the succeeding day, to find the organ irrecoverably lost, for visual purposes.

The progress to a fatal termination, as regards the cornea, perhaps, in most cases, occupies

several days ; but still, the danger to the organ is so great, when once the disease is developed, that every attention should be given to the treatment, until the morbid action be decidedly checked.

When purely local in its origin, the disease arises either from violence, as a blow, from cold, or from contact of morbid secretion—being either traumatic, idiopathic, or specific—generally the specific form is the most acute, and passes to the destructive termination most rapidly, and the traumatic is usually more severe than the idiopathic form—the mode of origin of the disease, should then, if possible, be ascertained, as determining, in some measure, the activity of the treatment.

The specific disease is the most common, but it is often difficult to determine that it is so, without examination of the genitals ;—patients so frequently deny the existence of gonorrhœa, even when it is productive of much suffering. The specific ophthalmia, of gonorrhœal kind, does not always result from contact of matter, from the urethra of the individual, but it may be obtained by association, or intercourse, with other infected persons.

12. One of the most severe and rapidly destructive cases of gonorrhœal ophthalmia that I have known, was in a female between sixty and seventy years of age. She occupied the same

apartment as her son, a young man about twenty-six years of age ; he became the subject of acute gonorrhœa, and, in cleansing the affected part, he used a towel, which was unfortunately used afterwards by his mother in wiping her face, &c. :—she became affected with purulent ophthalmia, nearly simultaneously, in both eyes, which caused slough, of both cornea, in less than three days. I saw her after such destruction had taken place. Our enquiries should, therefore, extend beyond the individual, to his or her associates, &c.

The mode of origin of the disease being determined, the next point is, to ascertain the degree of power possessed by the patient. If there be a vigorous circulation, without disposition to other important organic disease or condition, as pregnancy, the force and volume of the circulation should be diminished by abstraction of blood from the arm ; but only to such an extent as to produce the change mentioned, not to reduce the general power much below par ; the effect thus produced on the circulation should afterwards be kept up by abstinence, purgatives, and quietude : but, further, there are two forms of medicine, from the judicious employment of which, great benefit can be obtained. First, tartar emetic or ipecacuanha, in small doses, frequently repeated, to excite and keep up a condition of

nausea, but not to produce vomiting, which would be injurious, as promoting ocular congestion. Second, mercurials, as tending to check deposit of fibrin, should the local disease advance.

I have described the condition termed chemosis, to result from a deposition into the cellular membrane, between the conjunctiva and sclerotic, by which the former becomes elevated around the cornea ; and that, according to the degree and extent of the chemosis, the cornea is endangered : now the deposit, which occurs in the sub-conjunctival cellular tissue, may be either fibrinous, or serous ; the former takes place in the most acute cases, and, by its firmness and the rapidity of its effusion, soon obstructs the corneal circulation ; the latter, affording less resistance, and being thrown out with less rapidity, affects the supply of the cornea more slowly :—mercury affords a very powerful aid, in checking the adhesive effusion ; it may be combined with tartar emetic, or ipecacuanha, so that the operation of two powerful agents may be obtained at the same time. In patients of good constitutional power, these remedies should be freely administered after the general bleeding.

Persons of feeble power, of advanced age, of marked scrofulous diathesis, or females in an advanced stage of pregnancy, should not be submitted to loss of blood generally, but, be treated

by abstinence, purgatives, nauseating medicines, and mercurials.

In all cases, however, care must be taken not to get the general power too low. If the general power is sinking too much, the nauseating remedies should be omitted, and a more nutritious diet be allowed.

Locally. The head should be kept considerably elevated above the chest; such position will be found materially to mitigate suffering; leeches should be applied freely on the surfaces of the palpebrae and cheek, or, in case their use is forbidden, the angular vein should be opened, or a cupping-glass should be applied to the temple, or behind the ear; the local bleeding should be repeated on the recurrence of pain, or if the vessels become turgid, and of bright color. Warmth and moisture are serviceable for relaxing the vessels and membrane, and favoring a free discharge of pus; and may, at first, be repeatedly used, for short periods—as a minute or two: but so soon as the violence of the local symptoms has subsided, and the conjunctiva has lost some of the brilliancy and intensity of its colour, astringents should be employed;—alum is the best, which may be added to poppy decoction; at first, half a drachm to the pint, and this should be gradually increased in strength, up to six grains to the ounce, until

the tumefaction of the membrane subsides ; but it should be omitted on any recurrence of acute symptoms: throughout the treatment, some mild ointment, or fresh lard, should be applied to the cilia and canthi, after cleansing the organ, or after using the fomentation or lotion ;—it prevents agglutination of the cilia, and protects the part from excoriation.

After the local abstraction of blood, free blistering to the neck or behind the ear, is, I think, serviceable, and I usually direct it in those cases, especially, where I cannot use leeches.

The combined influence, of the means described, will seldom fail to cut short the disease, and destroy the acute stage ;—but, if they be pursued too far, a chronic stage will result of troublesome and obstinate character ; therefore, as the ophthalmia subsides, the diet must be improved, and all nauseating and mercurial medicines laid aside ; excepting so far, as may be requisite, to regulate the secretions, and at the same time, the astringent properties of the local applications should be augmented.

The disease, when of specific origin, should be treated more actively at first, than when it is idiopathic.

The disease having passed into the second stage, with chemosis and swollen palpebræ, but with a clear cornea, is hazardous, in proportion to the

extent and character of the former. So long as the chemosis is incomplete, or does not embrace the whole circumference of the cornea, the risk to the cornea, is not great; but, when the chemosis is complete, the life of the cornea is in momentary jeopardy; especially if the chemosis result from fibrinous deposit—the danger being less, when the cellular tissue is distended with serum. The chemosis usually commences at the lower part of the surface of the globe, and encroaches on the temporal and nasal sides of the cornea; and lastly extends above it. In examining the affected organ, therefore, the attention should be directed to this spot.

When the chemosis is incomplete, the treatment already detailed should be put in force, directly and energetically. I have never found it fail, when promptly put in operation and carefully followed—whereas, I have often seen it carried to the extreme degree, when the chemosis has been complete, but unavailingly; indeed, I am satisfied that the excessive depletion I formerly adopted and witnessed, has often tended to hasten the unfavorable termination of the disease. During some years, in which I had opportunity of seeing many of these cases, I did not witness a single instance in which the cornea altogether escaped; but a partial or entire slough of this texture invariably took place, when the chemosis

was complete, in spite of the most active general and local depletion, or the local application of strong stimuli or astringents, as recommended by some surgeons. I had reason therefore, to dread such cases, and was annoyed and distressed, whenever one presented itself to my notice.

The following case, (one of many), will show the extent to which I have carried the depletory treatment, and will, I think, prove its inadequacy to subdue the disease, when it has reached the stage now under consideration.

13. A man of the name of Death, about forty-^{case,} five years of age, stout made, and of good constitutional power, and without any morbid diathesis, applied at the Ophthalmic Hospital, having acute purulent ophthalmia in both eyes, resulting from exposure to cold and damp ; but unaccompanied by general febrile action. The disease had begun in the right eye, and on the second day after, the left became affected ; he had used some ordinary remedies, without any good effect, and within four or five days, from the commencement of the attack, he was brought to the institution. I examined him, and found the palpebræ of both eyes excessively swollen, red and shining, and a copious thick yellow discharge, tinged with red particles of blood, flowing from between the lids : careful separation of the palpebræ exposed the ocular conjunctiva, in a highly and completely

chemosed state, in each eye; with the cornea, in the right, universally dull and opake, but that in the left clear, brilliant, and apparently healthy—experience made me dread the result, but I determined to exert what I then considered the best means, to prevent the loss of the left eye; the right being past surgical or medical skill.

I directed bleeding from the arm till the patient fainted; and, as his bowels had been freely acted upon, I prescribed a solution of tartar emetic, of which he was to take a dose, containing a fourth of a grain, every quarter of an hour, (on his return home,) till he became nauseated; after which, the dose was to be repeated, whenever the nausea appeared to be subsiding; further, he was to take two grains of calomel, and half a grain of opium, every six hours; and he was furnished with three dozen of leeches, with directions to apply twenty around the left eye, if he experienced return of pain or uneasiness, (which the bleeding had in great measure relieved): the eyes were to be bathed freely and frequently with warm poppy decoction. I visited him about ten o'clock at night, and found that all my directions had been carefully attended to; he had been kept in a state of nausea, and thirty leeches had been applied around the left eye, on the palpebræ and cheek; but he still complained of much local pain, and the palpebræ and con-

junctiva were again tense, and of florid color;—he was hot and restless, with febrile excitement, and had a quick and sharp, but compressible pulse;—he had lost near thirty ounces of blood from the general bleeding, and several ounces more from the application of the leeches; yet I thought it necessary to take away a further quantity, there being evidence of acute local action; I therefore bled him again from the arm till he fainted, which he did after he had lost about eight ounces of blood; this mitigated his pain, and the palpebræ and conjunctiva lost their depth of color and brilliancy, and I left him to continue his medicines, &c., as previously directed,—in the hope that I had succeeded in arresting the disease. I was with him again about seven, A.M., when I found that all my labor and pains had been in vain; the left cornea had become dull and opake; the relief obtained by the second general bleeding, had been of short duration; severe pain, and sense of fulness, returned within two hours after I left him at night, and had continued till two or three hours before my morning visit, I conclude, until the vitality of the cornea had been destroyed. The poor fellow was several months before he recovered from the general effects of the severe depletory treatment; the whole of each cornea sloughed off, and irrecoverable blindness ensued.

In many other cases, in which the local disease had advanced to the production of a complete state of chemosis, I have fully and fairly tried the strict depleting plan of treatment, and rarely, with better success than in the case narrated.

I have tried also, locally, strong solution of nitrate of silver, and the undiluted solution of the diacetate of lead; but I have never seen the slightest advantage gained, by such remedies, in the state of the disease, in which complete chemosis existed: in the early stage, I grant, that powerful astringents are sometimes of much service, as they are in the catarrhal affection; but I consider their employment to be more frequently prejudicial than beneficial, adding, as it were, fuel to the fire, and do not, therefore, recommend their use, because the first stage of this disease is always curable by simple means.

The constant failure of all ordinary modes of treatment, in the second stage of the acute purulent inflammation, when complete, led me frequently to close and attentive consideration of the subject,—and, eventually, induced me to adopt a plan for its relief, which has been most gratifying in its result; and at the same time, simple in its application.

I became satisfied, from careful observation, that the cornea did not lose its life from inflammatory action, affecting its structure; and I also

ascertained, by other morbid conditions of the conjunctiva and cornea, that the former was the principal channel by which the vessels of the latter passed, for its supply or nutriment ; it was easy, then, to conclude, that the chemosis, by mechanical influence, produced an arrest of circulation, or strangulation of the vessels, in the conjunctiva, over the margin of the cornea and sclerotic ; and that thus the cornea and its conjunctival covering, being deprived of nutritious fluid, lost their vitality.

The remedy that suggested itself to me, under these circumstances, was free division of the chemosed part, so as to relieve the tension of the conjunctiva, and to allow of the escape of fluid from the subjacent cellular tissue, and thus get rid of a great deal of that, which I conceived to operate mechanically, in obstructing the circulation of the cornea. My opinion, of the probable efficacy of this proceeding, was heightened by a knowledge of the excellent effect of a similar plan of treatment, in cases which I consider somewhat analogous ; viz., in cases of severe phlegmonous inflammation of cellular tissue, in other parts of the body ; having often witnessed the arrest of gangrene and mortification, by making free incisions, in such cases, through the skin, and cellular membrane ; which, no doubt, acts beneficially, by relieving the tension of the former, and by

partially unloading the latter, and thus taking off a pressure, which impedes or arrests the circulation.

I was aware that incision, and excision, of parts of the conjunctiva, had been suggested and effected, in the condition of chemosis; and, that the result of such treatment had not been very satisfactory; this want of success, however, appeared to me as a consequence of the mal-application of the principle, and not from error in the principle itself; for the incisions in the membrane, and excisions of portions of it, had been generally made in a direction corresponding to the margin of the cornea, and frequently extended completely around it, but at a short distance from it; thus the vessels passing to the corneal portion of the conjunctiva, must have been in great part, if not, *in toto*, divided, and the supply of the corneal portion and cornea cut off, or nearly so;—the operation tended, therefore, rather to augment, than diminish the mischief, it was meant to obviate: this error arose from ignorance of or inattention to the anatomy of the organization of the part.

An attempt to relieve severe phlegmonous inflammation of the arm, by a circular incision through the integuments and cellular membrane, as in amputating, would, in my opinion, be just as likely to succeed, as the circular division of

the conjunctiva, in the ophthalmic disease, now under consideration.

In the plan I proposed, the incisions were to be made, through the sclerotic portion of the conjunctiva and its subjacent cellular tissue, beginning at the margin of the cornea, and extending towards the edge of the orbit, in a direction as rays radiating from a centre, but avoiding immediately the transverse and perpendicular diameters of the globe; that the larger vessels, passing to the cornea, might not be injured. The plan being decided upon, I soon had opportunity of carrying it into effect.

14. The case was one of specific origin, (gonor-^{case.} rheal,) affecting one eye, in a young man of robust make, and good constitutional power; the disease had reached the second stage, chemosis being complete, and the cornea generally hazy, but its surface brilliant, except at one spot at the nasal side near to its margin, where mortification had commenced, and the palpebræ were swollen, red, and tense;—the progress of the complaint had been so rapid, that the patient's first application for medical aid, was to me at the Ophthalmic Hospital, when I found the affected organ in the condition that I have described. I immediately divided the chemosed conjunctiva in the following way; the patient was seated upon a low chair, and I stood behind

him, so as to receive his head, when inclined backwards, against the lower part of my chest : I then carefully, and with as little force as possible, elevated the superior palpebra with the point of the fore finger, (as in the operation of extraction of a cataract,) having the finger covered with a piece of fine linen, to prevent its slipping, (one of my pupils depressed the lower lid;) next, with a fine cataract knife, I divided the conjunctiva and the subjacent cellular membrane from the margin of the cornea, in a direction between the attachments of the recti muscles ; making two incisions in each of these positions, or eight in all : in passing the knife, its point was made to penetrate the membrane, just over the junction of the cornea and sclerotic, and the back, or blunt part of the instrument, was opposed first to the cornea, and afterwards, as the incision was extended, to the sclerotic : thus there was little risk of injury to these important structures ; and the chemosed part was divided from within to without. The chemosis was firm, the effusion being in great measure fibrinous. Immediately after the operation, the application of hot water by a sponge was freely made, and continued for ten or fifteen minutes : the part bled freely ; the conjunctiva lost its bright carmine hue, and became of a pink color, and somewhat flaccid, and the patient expressed himself relieved. Afterwards, I

directed him to be bled, till the fulness and firmness of his pulse were subdued, but not to syncope, (he lost about eighteen ounces of blood;) and to take directly fifteen grains of the compound pill of calomel and colocynth, and two grains of calomel, with half a grain of opium, every six hours ; he was to apply leeches freely to the palpebræ, if pain recurred, and to bathe the organ frequently with warm poppy decoction : he was to take only of gruel, tea, toast and water, or soda water, and a dose of salts, if the pills did not operate before bed time. I saw him on the next day, and found that the disease was checked ; the largest part of the cornea had recovered its transparency, but an oval spot, equal to about one-sixth of the whole, was dead; the chemosis was much reduced, and the membrane more lax and pallid than when he had quitted me the day before : his medicine had acted freely on the bowels; he had applied a dozen leeches to the palpebræ in the evening before in consequence of some return of pain ; he had taken three pills of calomel and opium, and had used the fomentation frequently; he had enjoyed several hours' good sleep, half reclined (as I had directed,) and was free from suffering ; the secretion had become thinner and paler, but was still very copious ; the tumefaction of the palpebræ had very much subsided, and their color was purplish and dull. The same form of

diet was continued through the day ; he was kept in a darkened room, perfectly quiet ; he used the poppy fomentation, and took his calomel and opium at night, and on the following morning. About forty-eight hours after I had divided the chemosis, the acute stage was annihilated, and I left off the calomel and opium, and only gave him a little mild aperient ; I directed him to take a moderate portion of animal food, and to add some alum to the poppy decoction, (a drachm to a pint), and to use a very weak preparation of citron ointment at night. At this time the discharge had become thin and white, the swelling of the palpebra and the chemosis were but trifling, and the mortified portion of the cornea had begun to separate. The patient recovered rapidly under a gradual augmentation of these means, and escaped with a small, dense, opake cicatrix on the cornea, which did not interfere with vision.

The result of the foregoing case was extremely satisfactory and gratifying to me, for I had not previously seen one eye saved, in which the disease had made the same progress, but, invariably, under all the plans of treatment before exercised, the cornea had been destroyed.

Since the occurrence of the case which I have related, I have had numerous opportunities of testing the soundness and advantage of dividing

the chemosis in a similar manner, and have found it successful beyond my expectations ; indeed, it effects more than I had contemplated, for it prevents the necessity of severe general depletion, and saves the patient from the consequences of such treatment, which I have known to continue for weeks and months.

I shall give a few more cases in illustration of the plan of treatment adapted to this formidable and important disease, and afterwards offer a few remarks upon it.

15. Two young men, each about nineteen or Cases. twenty years of age, of good constitutional power, and robust make, applied at the Ophthalmic Hospital in the same week, being, however, strangers to each other. Each suffered from acute purulent ophthalmia, and the disease had reached the second stage, chemosis being complete, and the palpebræ swollen and florid ; the cornea in one was slightly hazy, but in the other clear ; the diseases were of gonorrhœal origin, and had not existed more than forty-eight hours, and the affection was confined to one eye in each patient. There was no constitutional disturbance in either, and each had a good natural pulse. The chemosed membrane was freely divided in each case, as I have described ; and the bleeding resulting from the incisions was encouraged by the use of hot water for some time ; afterwards, each patient took an

active dose of calomel and colocynth, and was directed to apply twelve or eighteen leeches to the palpebræ in the afternoon ; to continue the use of the fomentation, and to pursue the most simple plan of diet, and to take only toast and water, or gruel; two grains of calomel and half a grain of opium, were prescribed for both patients, every six hours. In three days, the disease, in each, was so far subdued that the calomel and opium were discontinued, and a more generous diet, consisting of a small quantity of animal food daily, was allowed, and the local applications were made astringent, and slightly stimulating ; and, under a gradual augmentation of these means, the cases rapidly got well. The most unfavorable case, or that in which the cornea had a hazy appearance at first, recovered perfectly, and the cornea regained its usual transparency in a few days from the commencement of the treatment.

Case.

16. A young man, twenty-three years of age, of strumous habit, and enfeebled by want of proper nutriment, (he having been unable to procure employment,) was attacked with violent purulent inflammation in both eyes, in consequence of exposure outside a coach during a wet and cold night, as he was coming to London to seek for work. Two days after the commencement of the ocular disease, he was brought to the Ophthalmic

Hospital : and at this period the palpebræ were very much swollen, red, and tense ; there was a profuse purulent discharge, and when the globes were exposed, chemosis was discovered complete in each eye ; and in the right eye mortification of about one-fourth of the cornea, with a general haziness of the remaining portion ; but in the left eye the cornea was clear : he was pallid, and his pulse feeble. I incised the chemosis in each eye freely, and prescribed a brisk purgative, small doses of calomel and opium, night and morning, leeches to the palpebræ in the afternoon of the same day, frequent use of poppy fomentation, and a moderate diet, with broth or beef tea, milk, &c. Two days after, the tumefaction of the palpebræ was so much reduced, that he could open the eyes, so as to expose the corneæ without aid ; the secretion was white and thin, the conjunctiva of a pale pink color, and the chemosis had greatly subsided ; the mortified part of the right cornea had begun to separate, whilst the remaining portion of this tunic, and the entire of the left, presented a clear and healthy character. His diet was improved, and some quinine was prescribed; at the same time the local applications were made astringent or stimulating, alum lotion and citron ointment, much diluted, being employed. The recovery was rapid, but an indelible white spot exists on the right cornea.

Case.

17. A married woman, about twenty-eight years of age, mother of three children, was sent to my house from the country, in the autumn of 1837, having suffered severely from acute purulent ophthalmia, for five or six days. The palpebræ of both eyes were very much swollen, red, and tense; there was a copious, thick, purulent discharge; there was complete chemosis in each eye, and both corneæ were hazy, and a dull opake spot existed on each, but of greatest magnitude in the left eye. She had been actively treated by bleeding, generally and locally, purgatives, abstinence, &c., and was pallid, with a feeble, quick, and easily compressible pulse. She suffered from continued pain and uneasiness, but not so severely as she had done a day or two previously. From the extent of local mischief, and the feeble condition of the patient, my prognosis could not be otherwise than very unfavorable; but I considered it to be my duty to make every exertion to preserve even a part of one cornea. I therefore immediately, (in my own room,) incised the chemosis very freely, and applied hot water, with a sponge, for fifteen or twenty minutes, and then sent the patient off to the Ophthalmic Hospital in a coach, with written directions for her to have a good diet of animal food, and a moderate quantity of porter; two grains of sulphate of quinine, with a little acid,

and infusion of roses, every six hours, and locally, to use poppy fomentation and a simple ointment; to be blistered behind the ears, and to have leeches applied to the palpebræ, in case of return of pain; she had been freely purged before I saw her, and the secretions were in good order when she came up to town, except, perhaps, that of the skin, which was somewhat inordinate, and this induced me to prescribe the mineral acid with the quinine; whilst the very low condition of power, and weak circulation, determined me at once to begin with tonic remedies generally. A very rapid change took place, for on the next day the palpebræ were much reduced in size and color; the discharge was thinner, the chemosis greatly lessened, and a line of demarcation apparent around the mortified part of each cornea, whilst the parts, retaining vitality, had lost much of the haziness which had existed the day before. The alum was now added to the poppy decoction for a lotion, and the plan previously prescribed persevered in; in a few days the mortified parts of the corneæ separated, nearly one half in the left eye, and about one-third in the right; and the separation of each slough opened the anterior chamber, so that the aqueous fluid escaped, and the iris protruded in each eye, and plugged the opening through the cornea: the openings into the anterior chambers

were not of serious magnitude; that, in the right eye, being about as large as a small pin's head, and that in the left, rather larger than the rounded end of a probe; for the inner laminæ of the cornea, and the aqueous membrane, had not suffered to the same extent as the conjunctiva corneæ, and the superficial layers of the cornea itself; but in tracing, from without to within, the extent of destruction gradually lessened; and this is usually the case, except when the entire cornea mortifies.

As the sloughs separated from the corneæ, a more generous diet was given, and the strength of the local applications increased,—citron ointment being used instead of the spermaceti; and when the separation was completed, a weak solution of nitrate of silver (a grain to an ounce of water,) was applied to the surface of the eye daily, for a few days, till the healing action was fairly established in the corneæ; belladonna was also applied to the eye brows, during the same period, to restrict the protrusion of the irides. The patient gradually recovered, with opacities of each cornea, and disfigured and diminished pupils; the opacity of the left cornea occupied above two-thirds of the space of this texture, and completely covered a small pear-shaped pupil, which was drawn beneath the opaque part; the opacity of the right, occupied about one-half of the cornea, and the

pupil, of a pear-shape, and diminished nearly one-half, was, in great measure, covered by the opaque cornea. I expected that much of the opacity existing, when she left the Ophthalmic Hospital, would be removed by absorption, so as to afford her tolerable vision in the right eye, whilst I felt satisfied of being able to extend the small pupil in the left eye, so as to bring it beneath the remaining transparent portion of the cornea, which existed in the most favorable position, viz:—downwards and outwards; but she could, even when she left, guide herself about, and perform common domestic duties. (June 8th, 1838.) The operation contemplated above has since been performed, and the patient now has good vision.

The following case will be found highly interesting in several respects.

18. A medical gentleman, aged near forty years, Case. contracted acute purulent ophthalmia in the left eye, in consequence of some matter spirting into it, from an abscess of one of the lacunæ of the urethra, which he punctured for a patient under his care: the ophthalmia did not appear for some days after, but then came on in a very acute form: he was treated most actively, by general and local blood-letting, blistering, purging, abstinence, and mercurials; but, in spite of all this the cornea became hazy, and the disease commenced in the right eye. I was then requested to see him, and

found him pallid and feeble, with a quick, small, compressible pulse, much feeling of debility little or no appetite, the bowels acting freely, and his gums and tongue swollen and tender, from influence of mercury, of which the fœtor of breath, and discharge of saliva gave further evidence. The palpebræ were swollen, red, and shining, but most so in the left eye; the discharge of thick yellow matter was copious; complete chemosis existed in each eye; the cornea of the left was hazy at the outer part, and dull and opake at the inner part, nearly to half its extent; the cornea of the right eye was perfect. I first freely divided the chemosed membranes in each eye, and encouraged bleeding from the part by application of hot poppy decoction; and then prescribed a nutritious diet, some quinine with infusion of roses and acid, and an astringent gargle; and locally, the alum with poppy decoction and a simple ointment. This treatment succeeded in arresting the mischief; in less than forty-eight hours the acute local symptoms had subsided, the tumefaction of the palpebræ and conjunctiva being much reduced, the discharge lessened and thinner; the left cornea exhibited a defined slough of mortified part, and the right cornea remained clear and perfect. The recovery was very slow, in consequence of the extreme debility induced by treatment, previous to my seeing the

patient; the slough separated from the left cornea, and caused a large opening into the anterior chamber which became plugged by the iris at first; and the healing process commenced well, and I concluded the eye would be saved from further mischief; but, from some slight blow, or sudden effort in sneezing, a further prolapse of iris occurred, the lens became displaced, and eventually escaped through the opening in the cornea, after which the opening gradually closed. Absence from business, in the country, for a few weeks, restored the general health. This gentleman has now a perfect right eye, and, in the left, the inner half of the cornea is opake, but the pupil has been destroyed by the prolapse of the iris, which is united in the cicatrix of the cornea;—useful vision might be obtained by forming an artificial pupil.

19. A case of very severe gonorrhœal ophthalmia has occurred in the person of a delicate and feeble scrofulous young man, (aged nineteen,) and been treated at the Ophthalmic Hospital during the last year;—he applied about nineteen hours after the first appearance of disease in the eye; yet the palpebræ were excessively swollen and red, and the chemosis complete, but the cornea fortunately clear; I was obliged to use the speculum to expose the globe, before I could effectually divide the chemosed part, and could then

only make five incisions ; bleeding was encouraged by warm water, and he took a mild aperient in the afternoon ; a few leeches were applied to the eyelids, and the eye was frequently bathed with poppy decoction, containing a small portion of alum ;—I prescribed one grain of calomel and half a grain of opium, night and morning, and directed that he should have a moderate quantity of good nutritious food. The treatment perfectly succeeded in saving the eye, but the patient suffered afterwards from some slight chronic affection for a few weeks.

Case.

20. A young man, aged twenty-one, a bricklayer by trade, applied at the Ophthalmic Hospital on the 10th of September, 1839, having acute purulent ophthalmia of the right eye ; the palpebræ were swollen and red, but not so much so as to prevent a fair exposure of the globe ; the palpebral conjunctiva was red, tumid, and villous ; the sclerotic portion of the ocular conjunctiva, was also red, thickened, and projecting, being raised round the cornea by deposit in the subjacent cellular tissue, so as to form complete chemosis ; the deposit was principally fibrinous, the chemosis being very firm ; the cornea was a little hazy at its outer or temporal margin ; the disease had commenced just one week previously, by itching and smarting, with a sensation of grit or sand in the eye, and a thickish yellow secretion, which

still continued in abundance, and was purulent: the patient had been affected with gonorrhœa of an acute kind six weeks before, and had a gleet upon him at the time he applied at the institution. I immediately divided the conjunctiva in the mode I have described, making five radiating incisions; and prescribed for him two grains of calomel and half a grain of opium, night and morning; sulphate of magnesia, with an addition of dilute sulphuric acid, occasionally, for an aperient; a pint of poppy decoction with half a drachm of alum dissolved in it, to be applied warm, as a lotion to the eye, every three or four hours, and some simple ointment to be smeared on the eyelashes and canthi at night, to prevent agglutination of the eyelids; I desired him to take a spare diet, and refrain from stimuli; also to keep quiet at home: rapid improvement took place as regarded a diminution of the conjunctival affection; but a very small slough formed and separated at the outer margin of the cornea, leaving a small and transparent depression: on the 17th I ordered him a better diet and some porter, omitted the calomel, and prescribed fifteen drops of the solution of yellow bark thrice a day; on the 20th the reparative process had commenced in the depression or ulcer, and on the 29th the ulcer was filled and healed, and

only a very slight degree of chronic conjunctival affection remained.

During the treatment his gleet disappeared.

Several other cases have been submitted by me to this plan of treatment, and with equal success ; so much so, that in every instance in which the eye could be saved, it has been saved ;—in only one instance has the cornea suffered afterwards, having been clear at the time of the operation.

Case.

21. The patient was a woman, near fifty years of age, of extremely anxious temperament, and in a very low and nervous condition, the pulse being feeble and irregular ; the ocular disease was of idiopathic kind, and in one eye, had produced a complete state of chemosis, whilst, in the other, it was comparatively slight : both corneæ were perfectly clear. I divided the chemosed membrane freely, and prescribed medicines to promote a proper state of secretion, and increase the general power, with a generous diet for the same purpose ;—when I saw the patient again, two days after, the treatment appeared to have had the best effect, for the chemosis was nearly gone, and the cornea remained perfect ; yet, after a few days, ulceration commenced at the lower part of the cornea, and gradually extended, so that it penetrated the entire substance of the cornea and aqueous

membrane, and opened the anterior chamber, letting out the aqueous fluid, and permitting slight prolapse of the iris; I considered this ulceration to be the consequence of defective power, and I accordingly increased the tonic treatment and nutriment;—by degrees, the general power improved, the ulcerative process stopped, a healthy action was set up, and the patient recovered, without any serious injury to the organ.

With the above exception, I do not know of any instance, in which the plan of operation, which I have recommended, has failed to arrest the destructive effects of this formidable disease.

In some cases of conjunctival disease with chemosis, but combined with morbid action in some of the deeper seated textures of the globe, I have tried the division of the conjunctiva, without, however, expecting that it would be as successful, as in the pure cases of conjunctival affection; I have not therefore been disappointed in the unsatisfactory termination of a few of such cases.

Some of my colleagues, a few of my professional friends, and several of my pupils, have also tried this plan of treatment, in cases of severe purulent ophthalmia, and all speak in the highest terms of its efficacy, with one exception.

From my present experience in the plan of treatment, I feel satisfied that its adoption will

certainly save the cornea, which has not already become affected, whatever may be the extent and violence of the surrounding conjunctival disease ; that when the cornea has become hazy, but still retains its brilliancy, or property of reflecting light, the operation will prevent further mischief, and that the cornea will probably be entirely restored to its original integrity ; at all events, in such a case, (submitted to this treatment,) the cornea will suffer but triflingly ; that when part of the cornea has lost vitality (which is indicated by its perfectly opake state, and dulness, or loss of reflective property,) the division of the chemosis will prevent the extension of the mortification, and save that part of the cornea which may still retain life ; that the effect of the operation is not promoted by any means which tend much to depress the general power, nor is it frustrated by a tolerably full action of the heart and arteries ; that its influence is purely local, and its beneficial operation not likely to be interfered with, unless by two extremes, viz., great excess of arterial action with fever ; or extreme feebleness of vascular power.

It is only, therefore, in cases in which such extremes exist, that I now deem it requisite to adopt other than simple and ordinary treatment generally, such as regulating the secretions, and allowing a diet adapted to the power and age of

the patient, excepting when the chemosis is unusually firm or fibrinous, when I give mercurials to check such deposit.

When the force of the circulation is greater than natural, with or without febrile excitement, I abstract blood, but merely to such an extent, as to reduce the pulse a little below the ordinary standard. If the general power is much below what is proper, I immediately begin to promote its restoration, by a good and nutritious diet, with some stimulus, to which the patient has been accustomed, and frequently give also some tonic medicine. Locally, after the division of the chemosed part, I direct some simple fomentation to be used frequently, for twenty-four hours, and in case of pain continuing or returning, I direct leeches to be applied freely to the palpebræ, in number according to the degree of local action ; after the pain has subsided, I recommend the fomentation to be made astringent, by the addition of some alum, and, as soon as the discharge acquires a whitish character, I discontinue the simple ointment, (at first employed to prevent the agglutination of the cilia,) and use, instead, a weak stimulating application, such as the diluted ointment of the nitrate of mercury, or the diluted ointment of the nitric oxide of mercury ; and I further direct the strength of the lotion or fomentation, and of the ointment,

to be gradually increased, or I make a change to some other astringent or stimulant, (which I generally find most advantageous,) till I perceive that all parts of the conjunctiva have recovered their healthy aspect.

When I have made the division of the chemosed membrane freely, I have not had occasion to repeat the operation; but when it has not been effectually done at first, in consequence of the excessive tumefaction of the eyelids, or from the resistance of the patient, I have had to repeat it; this has happened two or three times.

Since I have abandoned the means, which are calculated rapidly to exhaust the general power, I have not had to combat an obstinate chronic stage of the disease, which formerly was of frequent occurrence, and generally troublesome, in proportion to the severity of the means used to check the acute disease, and its effects upon the system.

When the entire cornea is found to be opaque and dull, with a complete state of chemosis, there is not any prospect of saving vision, but, nevertheless, I should adopt the same plan of treatment, as it mitigates suffering, and if the surgeon be deceived in his inspection of the cornea, it affords the best, or only chance, of saving such portion as may retain vitality.

The mortification of the cornea is not always

to its entire extent, in cases neglected or maltreated, or treated by depletion, &c.; but it sometimes happens, that only a portion suffers, rarely however, less than a third or a half; and as soon as this is complete, the activity or violence of the disease abates; the palpebræ lose their tension, their shining and florid color, and become of a purple hue, dull and somewhat corrugated; the conjunctiva becomes of a pale pink color, and flaccid; the secretion thin and whitish, although still often mixed with red particles of blood.

It is of much importance to note these circumstances; for a hasty and rough examination of the affected organ, may destroy all chance of saving an eye, which might otherwise be preserved, so as to afford some useful degree of vision.

The change which I have described as taking place in the palpebræ, conjunctiva, and secretion, denotes a decided change in the disease, and if the cornea has suffered from partial mortification, the mortified part, will, under this change, be rapidly separated. Now, whilst the mortified part of the cornea is separating, or when it has separated, any sudden and careless pressure upon the globe may force out the humors, and destroy the organ;—the examination of an eye in this condition should, therefore, be conducted on a most cautious and deli-

cate plan, so as to expose the cornea, with the least possible force; to obtain a proper view of the cornea some degree of force is requisite, in consequence of the swollen state of the palpebræ, but it is easy to apply the requisite force so gently and gradually, as not to incur risk. By incautious examination of eyes, subject to the symptoms that I have last described, I have several times known the humors forced out to such an extent, as to render the organ useless. I have seen the crystalline lens projected several feet distance from the patient, under forcible examination by an imprudent surgeon.

Another evil results from over depletion, or that which reduces the general power of the patient much below the ordinary standard: for, under such circumstances, supposing the cornea to have suffered from a partial mortification, and the mortified part to have separated or sloughed off, no healing or healthy action ensues, the local power being inadequate to its institution; a transparent depression then denotes for a time the position and extent of the loss of substance, but unless some general or local means, or both, be resorted to, to excite a proper action, the exposed surface of the depression assumes a dull light brown, or dirty-looking aspect, becoming opaque; and this appearance extends also in a small extent around the edges of the depression; after

a little while this dirty-looking layer separates, and exposes again a transparent clear surface ; but, again, under exposure and deficient power, a second brownish opake slough forms and separates, and so on, until that which had at first been of trifling extent, becomes by degrees most formidable, and perhaps destructive of vision.

The most effectual plan of checking this disposition to repeated sloughing, is by combination of local and general means ; the first should consist in the application by injection of a solution of nitrate of silver—one, two, three, four, or more grains, to an ounce of distilled water,—beginning with the weak solution and gradually augmenting the strength, till the desired effect be produced : full particulars of its mode of application and repetition will be given under the subject of ulcers of the cornea.

The local remedy is to excite local action, and thus prevent further loss of vitality in the cornea; whilst the general remedies are employed to promote the requisite degree of general power, to maintain a healthy and healing process in the cornea, and, as soon as such effect is obtained, the local stimuli must be omitted, or an excess of local action may be the consequence, which would retard the reparative action. The general treatment should consist of a good nutritious diet, with moderate use of any stimulus previously

taken, as beer, wine, or spirit ; and perhaps in addition, some tonic, as quinine, bark, ammonia, steel, &c., &c.

Remarks.

Since the appearance of acute purulent ophthalmia among our troops in Egypt, the disease has been of frequent occurrence, not only in our army and navy, but among other classes of persons closely congregated, as in the Military Asylum, in the school of Christ's Hospital, in some of the large schools of Yorkshire, and in many of the large poor houses. In various parts of Europe, the disease has also appeared, under circumstances very similar to those attending it in this country, and, in all situations, has been dreadfully destructive of vision. I hope that the principle and plan of treatment, which I have laid down, will tend greatly to diminish the destructive effects of this ophthalmia ; but I consider it further necessary to offer my opinion on the means of arresting its extension, when it makes its appearance amongst any assemblage of persons, whom duty or inclination may bring together.

The facts already before the public, respecting the disease, as prevailing in our army, the Military Asylum, and other communities or institutions, can leave little doubt of the contagious character of this disorder : and, in my opinion, not only shew that the disease can be propa-

gated by the actual contact of morbid secretion, but that the places inhabited by the infected persons, have the atmosphere contaminated, so as to occasion an extension of the disease.

First,—I should advise, therefore, that when the purulent ophthalmia attacks several individuals in the same community, they should be immediately separated from the general mass, and sent to some distant place, which would offer a decided change ; but in which the soil should be dry, and free from exposure to the east wind.

Secondly,—that those who had been previously in close association with the infected parties, should be also separated from the general mass. I mean, particularly, such as had slept with any of those in whom the complaint had appeared, or who had been in close contact with them, either for purposes of study or recreation. These parties might be put into a separate building, but should be kept from close intercourse, until sufficient time has elapsed, to determine whether they be infected or not ; and they should be carefully examined, at least twice in the day, that the earliest symptom of the disease might be detected, so that those in whom the disease appears, might also be immediately separated from the others.

Thirdly,—that the clothing, bedding, &c., of

the infected persons, should be submitted to the ordinary modes of cleansing, and immediately afterwards exposed to a high temperature of dry heat, which appears to have a considerable influence in destroying any property of infection in such articles: and this plan might, perhaps, be advantageously adopted, with regard to the bedding and clothing of the uninfected, previously to their separation, individually or altogether, from the residence in which the disease had appeared.

Then, fourthly,—that each and every one of those liable to the contagion, should also be carefully examined twice every day, in order to detect any disease, and to separate any infected parties.

Fifthly,—that every attention should be given to the cleanliness of every individual; that the diet and clothing should be such as would be likely to maintain a good condition of strength and temperature; and that the assemblage of many together in the same apartment, for more than a few minutes at a time, should be prevented.

Lastly,—that the apartments and buildings generally, in which those infected had resided, should be well cleansed and fumigated.

I offer these remarks very humbly, as I have

not had sufficient experience in treating the disease, under the circumstances to which I consider them applicable, to enable me to speak confidently of the plan.

OF PURULENT OPHTHALMIA IN THE INFANT.

Local
symptoms and
appearances.

THE disease commences with a light yellow, or straw-colored discharge, from the conjunctiva of the palpebræ, which collects at the inner canthi and upon the cilia, coagulating and causing their adherence; the ciliary margins of the palpebræ acquire a pinkish red color, and if the palpebræ be everted, their conjunctival lining is found to be red, thickened, and villous;—there is, usually, some degree of intolerance of light, but sometimes not more than the infant commonly experiences,—frequently there is much lachrymation.

The discharge increases in quantity; in consistency becoming thicker, and in color, acquiring a deeper tinge of yellow, and eventually, has red particles of blood mixed with it: at the same time the ocular conjunctiva, as far as it covers the sclerotic coat, participates in the disease, becoming red, thickened, and villous, as the palpebral division of the membrane; and afterwards it becomes elevated by effusion into the cellular

tissue, between it and the sclerotic, either of serum or fibrin, or of both, and chemosis is formed: the palpebræ also become affected; they swell and acquire a tense and florid surface.

The tumefaction of the conjunctiva, and its protrusion by subjacent deposit, is sometimes so great that it is pressed out of the palpebral opening of the lids, and presents an irregular, spongy, and villous looking mass; occasionally, this protrusion causes eversion of the eyelids—when so large a projecting vascular mass is presented, as to create the greatest alarm in the parent, and horrid deformity in the infant: under these circumstances, the palpebral portion of the membrane forms the principal mass of the protruding part.

This stage exists but for a short period, for the cornea mortifies in part or in toto; generally the latter, and then the disease begins to subside the lids lose their tension and florid color, assume a dark purple hue, and appear dull and wrinkled; the conjunctiva loses its bright carmine tint, and acquires a dull pink color; the secretion becomes thin and white.

The suffering of the little patient we can only judge of by its cries and restlessness; but it is, no doubt, considerable, if we may judge from what is experienced by the adult, under similar circumstances.

Constitutional symptoms. The constitutional disturbance is often considerable, and evinced by restlessness, and derangement of important secretions.

The disease commences most frequently upon the third day after birth; sometimes it is perceived a few hours after the child is born, and occasionally it does not appear till the second or third, or even as late as the sixth or seventh week of infant life.

Causes.

The causes which produce the purulent ophthalmia in the infant, I believe to be threefold:— First, and most common, a morbid vaginal secretion from the mother, (leucorrhœa,) which comes in contact with the conjunctiva of the infant, in its passage through the vagina. Secondly, less frequent, a purulent secretion from the urethra of the mother, (gonorrhœa,) which produces the disease in the infant by contact, as in the former instance. Thirdly, exposure to cold and damp.

I have made inquiry and examination sufficiently often, to satisfy myself as regards the two first causes, and have found that leucorrhœa is a much more frequent cause of the disease in the infant than gonorrhœa. In the former case, the disease usually appears on the third day, and in the latter instance earlier, sometimes a few hours after birth; and the progress of the latter is more rapid and severe than the former. I have several times known the purulent ophthalmia to

begin in the infant of two, three, four, or even six or seven weeks old, and have considered such cases usually to arise from improper exposure of the child. First, because I have observed other symptoms, which indicated the effects of cold, as sneezing, and discharge from the nose, &c; and, secondly, because I do not think it probable that the disease would appear at so late a period, as the result of contagion from the mother: the ophthalmia, which does not appear till the second week, or later, is seldom so acute or rapid in its progress as that which occurs on the third day, or sooner.

I have observed that the power of the infant, Modifications. in some degree, modifies the disease: the delicate and weak child usually suffers most, and incurs most risk. The mode of origin also influences the disease, as when it results from the application of gonorrhœal matter, it is generally much more severe than when arising from leucorrhœa, or exposure to cold or light.

Before the ocular part of the conjunctiva has Treatment. become much affected, the disease is easily checked and cured by cleanliness, the frequent use of a weak solution of alum, and a mild or simple ointment; and if the bowels are not freely acted on, some mild aperient. Whenever a collection of yellow secretion takes place, at the inner canthus, or on the cilia, it should be care-

fully cleansed off with tepid water, or milk and water, by means of a piece of soft linen, and directly afterwards some alum lotion, (two to four grains of alum to an ounce of water,) should be applied in the same way freely, for about a minute. I prefer to have it used just warm; and, at the time of its application, the upper eyelid should be gently raised by its integument, so as to allow some of the lotion to pass to the surface of the conjunctiva. This I think much better than the use of the syringe, which I am confident frequently does harm, for it is scarcely possible to use it without inflicting violence on the conjunctiva; and the inexperienced or incautious operator with it, runs great risk of getting the disease from some of the solution, with matter, getting into his own eyes, of which I have known several instances. If the morbid secretion be first well cleansed off, the use of the lotion in the way I have mentioned appears to effect all that is desired: when the lotion has been applied, the cilia and canthi should be moistened, not loaded, with some simple ointment, put on by a fine camel's hair brush; the strength of the lotion should be gradually increased, and if the disease proves obstinate, a very weak solution of nitrate of silver, (half a grain to an ounce of water), should be occasionally dropped into the eyes. I cannot recollect a

single case in which these means have failed, when attentively adopted.

The second stage, or that in which the ocular part of the membrane becomes affected and chemosed, is always indicated by change in the palpebrae, which swell, and assume a red, tense, and shining character,—the extent of these symptoms being usually in proportion to the extent of the chemosis: this tumefaction of the eyelids is frequently such, as to prevent the surgeon from obtaining a view of the cornea, even by the exercise of great violence; it is therefore most satisfactory, that we can determine the condition of the disease by the aspect of the palpebrae, though we cannot at once form our prognosis, as when we can get a fair inspection of the cornea. So long as the eyelids are swollen and tense, and present a shining and florid surface, the cornea is generally safe, although it may be upon the verge of destruction; for no sooner is its vitality lost, in part, or in toto, than the tension of the palpebrae diminishes, the color becomes purplish, and the surfaces lose the shining or erysipelatous appearance; the discharge also becomes thinner and whiter; whilst under the circumstances first described, the secretion is thick and yellow. If the cornea can be exposed at the time that the palpebrae are swollen, and of brilliant color, it

will rarely be found to be in any great danger, as the chemosis is very rarely then complete ; on the other hand, when the cornea cannot be seen, in consequence of the swollen state of the eyelids, it is probable that the chemosis is great, perhaps complete, but it is not necessarily so. The surgeon being unable to expose the cornea, or ocular conjunctiva, cannot, of course, adopt the plan of dividing the chemosis, as directed in the same stage of disease in the adult ; he may however soon reduce the palpebræ, so as to obtain a view of the cornea ; and, if necessary, he might make the division of the chemosed conjunctiva : this can be accomplished, by applying a leech or two to the surface of the eyelid, according to the age and strength of the little patient ; after the leech has filled itself, and fallen off, bleeding from the bite should be encouraged, by the application of warmth and moisture, until the surface becomes nearly colorless, and somewhat flaccid : in children of two or three days old, a single leech will sometimes suck as much blood as will produce this effect, and in most cases it is necessary to arrest the bleeding after a short time, for the infant will not bear the loss of much red blood : by this means, the tension of the part being reduced, the cornea may be exposed with much less force, and, unless a great state of prostration should

forbid it, the chemosis might be then divided, as in the adult. I have not yet, however, tried this operation in the infant; not having had a case to which it could be fairly applied, since I have been convinced of its efficacy in the adult. I have seen several cases in which I could not obtain a view of the cornea, until after the local bleeding; but in all of these, I have found the cornea safe, and the chemosis incomplete, or the tension so little as not to endanger the cornea, after the use of leeches had reduced the tumefaction of the palpebræ; so that I had no occasion to exercise the more severe measure. Though the disease is very destructive to vision, in the infant, I think it generally so from neglect; for it does not pass to the destructive termination so soon as in the adult; which I attribute to the more lax connection of the conjunctiva over the junction of the sclerotic and cornea; so that a greater degree of chemosis is requisite, to arrest the circulation in the corneal portion of the membrane. Out of a large number of cases that I have witnessed, in which the tumefaction of the eyelids has been excessive, (appearing almost bursting,) but in which the color has been florid and the surface shining, I hardly recollect a single instance of even partial slough of the cornea ensuing under the influence of local bleeding, to such an extent as to nearly

destroy the color of the palpebræ ; which usually also produces some general prostration.

I do not often see these little patients with the disease in the second stage to an extreme degree ; usually, I am called upon to prescribe for them, before the second stage is complete, or after it has in a measure subsided, having occasioned partial or entire destruction of the cornea.

From those I have seen, I select the following case, as well illustrating the history and treatment of the disease, in all the severity of the second stage.

Case.

22. A young man, a tradesman, consulted me in consequence of suffering from an acute form of gonorrhœa ; and after I had seen him once or twice, he told me that he was married, and he was fearful that he had communicated the disease to his wife ; and upon seeing her, I found his suspicions to be correct. She also had the disease acutely, with a very copious thick yellow discharge, but she was in the last stage of pregnancy, and expecting to be confined hourly : little therefore, could be done for her at the time, but I told the husband to be very careful in looking to the eyes of the infant, when born, and desired him to let me know immediately he perceived any yellow discharge from between the palpebræ : some days after, he called upon me, in much distress, and requested me to visit

the infant as soon as possible ; as he was apprehensive it would lose its sight. I attended to his request directly, and found the infant with the palpebræ of both eyes swollen, tense, and shining, and of a bright florid red color—they appeared ready to burst ; a thick and deep yellow colored discharge was oozing from between the palpebræ ; the child was hot and restless. On enquiring respecting the appearance and progress of the disease, I learnt that the infant was not three days old, and that some yellow secretion had been perceived on the palpebræ a few hours after its birth ; that shortly afterwards, the eyes appeared a little red, and the discharge more copious, and that during the second night the discharge was profuse, and the palpebræ became swollen and red. The child was small, and had not apparently much power, which made me fear the result of the loss even of a small quantity of red blood ; but I felt compelled to incur any risk of this kind, rather than sacrifice the eyes. I could not, by any means, obtain a view of any part of either cornea. Some small active leeches were soon procured, and I applied one to each upper eyelid ; they filled themselves rapidly, and effected a very decided change in the aspect of the palpebræ, which lost their tension and florid color, becoming dull, lax, and of a pale pink hue : the child

also became pallid, and evidently affected by the loss of blood, though not more than three drachms, at the utmost, could have been removed. I checked the bleeding, by inserting the point of a camel's hair brush, loaded with a weak solution of nitric acid into the wounds, and directed a weak solution of alum, in poppy decoction, to be used frequently, just warm, after the lapse of half an hour, (to prevent a recurrence of bleeding from the leech wounds;) and after each application of the lotion, a little mild ointment was to be applied to the cilia and margins of the lids.

My directions were carefully attended to, and some hours afterwards, in the evening, my little patient was quiet, and had had some good sleep ; the palpebræ remained lax and dull, and the discharge appeared rather thinner, and separated more freely from the surface of the eye : on the following day, the tumefaction was altogether so much reduced, that, with slight force, I obtained sufficient view of each cornea, to satisfy myself of their being sound ; I subsequently increased the strength of the alum lotion, and employed a very weak citron ointment, instead of the simple unguent, and had the satisfaction to witness a complete recovery, with the safety of two beautiful blue and brilliant eyes.

After a sufficient quantity of blood has been

abstracted, the weak solution of alum, (two grains to an ounce of water,) should be used frequently, just warm ; and, subsequently, the case may be treated as in the first stage ; only the surgeon should watch his patient for a few days, as occasionally relapse takes place, if the case be neglected, or the patient be imprudently exposed.

Should the cornea be found hazy in part, or all over, or in part dull, indicating commencing mortification, when a fair view can be obtained of it, I should earnestly recommend the division of the chemosis ; but I think that four incisions would suffice, instead of eight, as I have recommended in the adult.

The swollen palpebræ of purple hue and dull aspect, with a thin discharge, indicate a cessation of the acute stage, and generally denote that the cornea has suffered ; the extent to which it may be affected cannot, however, be determined, but by inspection ; this is frequently a hazardous proceeding ; for, if the cornea has mortified to one-fourth or more of the whole extent of the texture, imprudent and violent examination may frustrate all hopes of saving any degree of vision, by bursting the weakened part, and forcing out the crystalline and vitreous humors in such quantity as to cause collapse of the globe : the examination should then be conducted with the utmost care and tenderness, and all pressure on the

globe be avoided; and, if any part of the cornea be found to retain vitality, every exertion should be made to preserve it;—in the first place, should there still exist any extent of firm chemosis, it should be divided; this I have not ever found;—but with the change in the condition of the palpebræ, and of the secretion which I have described, I have always discovered a lax state of *conjunctiva*, and a material change in the color of the membrane, it being of a pale red or pink hue, instead of a deep brilliant carmine, which exists during the continuance of the acute stage;—most frequently, the surgeon has to direct his attention to such means as will promote the separation of the slough, or the reparation of the parts destroyed; which should be such as to promote and maintain a due degree of general power; without which, a healthy local action will not go on for many hours together. The suffering from the acute stage, and the excessive discharge of matter, exhaust and enfeeble the infant very rapidly; so that when the acute stage subsides, the patient is frequently much reduced in power, and requires some general remedy to promote the restoration of its strength. If the general power be deficient, the local action will be insufficient to carry on the reparative process; and under such circumstances, when the first slough separates from the cornea, a transparent

depression will be left: and after a short exposure of the surface, a dirty brownish slough will form and separate, and then another, and so on, as I have described to take place in analogous instances in the adult;—in which place, I have also explained the treatment necessary to arrest and subdue such a condition. I have found the solution of the yellow bark, of Mr. Battley, of great service as a tonic for the infant, in doses of one or two drops, mixed in a little simple syrup, which the child will take readily.

I have mentioned a state of ectropion of the ^{Treatment of} palpebræ, with the protrusion of a large mass of ^{ectropion.} chemosed conjunctiva, as now and then occurring during the acute stage of the disease; if the membrane be lightly scarified, and subsequently a flow of blood be promoted by the use of warmth and moisture, the tumefied membrane soon subsides sufficiently to relieve the eversion of the eyelids; and, under the treatment previously described, the cure may be completed. When this state has been neglected for some days together, I have had some trouble to reduce the palpebræ to their proper position, but have never failed to effect it by the careful use of the compress, moistened by a mild astringent, when the acute stage of the disease has been subdued.

The most trifling permanent defect from purulent ophthalmia, is opacity of the cornea. When-

ever a part of the texture of the cornea is destroyed by ulceration or mortification, the texture is generally repaired by a new opaque deposit, and a permanent opacity generally results, corresponding to the destruction which had taken place; I have only seen one case in which extensive loss of cornea was restored by a deposit of transparent matter. (See *Ulcers of the Cornea*.)

When the destruction of the cornea has been so extensive as to open the anterior chamber freely, a prolapse of iris occurs; and the iris becomes subsequently caught and fixed in the cicatrix, and adherent to the cornea, constituting *synechia anterior*—the prolapse of the iris always occasions more or less disfigurement and diminution of the pupil, and draws it from its central position, towards the seat of the prolapsus; the pupil loses its rounded figure, and becomes pear-shaped; and in some cases so large a portion of the iris protrudes, that the pupil is entirely destroyed.

Sometimes, after the separation of a part, or of the entire cornea, and the commencement of the process of reparation, the new deposit becomes elevated by the aqueous secretion beneath, and a projection results, which is denominated *staphyloma*.

In very severe or neglected cases, which have proceeded to destruction of the cornea, in great

part or in toto, the weakened part gives way under the pressure of the muscles, and the aqueous, crystalline, and part of the vitreous humors escape, or are ejected, and the globe subsequently shrinks. I have never witnessed an instance of the bursting of the globe as connected with acute purulent ophthalmia, unless when the cornea has been extensively weakened by mortification and separation of slough.

Acute purulent ophthalmia rarely exists in Combinations. combination with disease of other textures of the eye, besides what have been mentioned. I have seen the sclerotic and deeper tunics become affected under the continuance of the acute stage.

OF CHRONIC INFLAMMATION OF THE CON-
JUNCTIVA, FOLLOWING PURULENT AND
CATARRHAL OPHTHALMIA.

Symptoms. AFTER the acute disease has been apparently subdued, so that the vision has become perfect, the patient may still experience some slight inconvenience from unusual secretion on exposure to bright light, or to cold air. This secretion is of a thin character, as that of the lachrymal gland; and, being in too great abundance to pass off by the natural channel to the nose, it flows over the inferior eyelid to the cheek; or else the patient is obliged frequently to apply a handkerchief, to prevent this overflow. The collection of the fluid on the surface of the globe causes a dimness of vision, and renders luminous objects chromatic; the circumference of such objects appearing to have a prismatic halo. All objects, however, become distinct and natural when the secretion is removed by a handkerchief, or other means; and, for this purpose the patient

frequently employs the hand. Occasionally, there is a sensation as if some fine dust or grit were lodged between the globe and eyelids. If neglected, these symptoms become more frequent and troublesome ; and, in addition, a more viscid and opake secretion is formed, which collects about the canthi of the eye, especially at the inner one ; and also about the eyelashes, upon which it coagulates under exposure to the air, and causes them to adhere together when the patient is asleep. This thick secretion appears to be formed by the meibomian glands, as well as by the conjunctiva itself. It causes irritation of those parts upon which it coagulates, of a severe itching or smarting kind ; and this irritation, together with the friction resorted to by the patient to relieve it, produces a soreness, which is usually of the greatest extent at the outer canthus—this part being submitted to the greatest degree of friction, in the constant endeavours of the patient to relieve the itching, by the application of the finger or knuckle. The thin fluid first alluded to, is more abundantly poured out when the viscid secretion takes place, and there is, consequently, more interruption of vision ; but still this function is perfect when the organ is properly cleansed.

If the disease be allowed to proceed further, the symptoms already described are gradually

augmented, and the vision becomes constantly impaired. The sensation of the existence of a foreign substance between the eyelids and the globe, is experienced whenever these parts are moved suddenly; and the motion of the upper eyelid is restricted, the patient being unable to elevate it to the full extent allowed of in the healthy state. Besides, there is a feeling of stiffness and weight of this part; and, by degrees, the vision becomes more and more obscured, until even the perception of large objects is lost.

Appearances. At first, on examination of the eye, merely the superabundance of fluid secretion is perceived, unless the examination be extended to the conjunctival surfaces of the eyelids, when the mucous membrane will be found to present a more florid aspect than is natural; its vessels being in great measure filled with red blood, and its surface, if viewed attentively, presenting minute elevated points resulting from the enlargement of its villi. This morbid change is most apparent, at first, in the conjunctiva of the lower eyelid. It increases when the viscid secretion occurs, and can then be usually detected in the membrane of the upper eyelid as well. Besides the florid appearance, and the small elevations on the membrane, it becomes thickened, and, by degrees, the red color assumes a deeper tint; the enlarged villi become more numerous and pro-

minent, and the membrane more turgid ; so that when the surface is exposed by everting the eyelid, it resembles very much the surface of a healthy ulcer ; and the resemblance is heightened, by the adherence of some of the opake, viscid, and puriform secretion, to the irregular surface. In consequence of this resemblance, the disease has been termed *granular conjunctiva*, or the *granulated eyelid* ; but, in fact, the small red projections on the conjunctival surfaces of the eyelids, are not granulations, like those formed during the healing of a healthy ulcer, but merely the natural villi of the mucous membrane inordinately augmented by morbid action.

When the conjunctiva of the upper eyelid exhibits this granular change, there is always some change in the ocular portion of the membrane more immediately opposed to the eyelid. Vessels carrying red blood will be seen passing from the direction of the superior rectus muscle, towards the upper part of the cornea ; and some few may be traced over the junction of the cornea and sclerotic, in that portion of the conjunctiva which covers the cornea. These vessels are continued from those of the conjunctiva which cover the sclerotic. The vessels thus rendered distinct, from being filled with red blood, may extend either to the distance of

a few lines over the cornea, or may be prolonged near to its inferior margin ; and, according to their extent, there will be found greater or less thickening and opacity of the membrane traversed by these vessels. When such appearance is presented, the cornea is said to be nebulous and vascular. (*See plate 2, fig. 3.*) It is this condition of the corneal conjunctiva which interrupts and obscures the vision. It is important to note, that the vessels perceptible upon the surface of the cornea, from being filled with red blood, are only found to pass from the upper margin towards the lower, except in cases very protracted and severe, when the ocular conjunctiva becomes generally red, tumid, and granular, as that of the eyelids ; which change first takes place in the sclerotic portion of the membrane ; but, eventually, in extreme cases, it extends to the corneal portion also : and I have seen, in a very few instances, the conjunctiva of the cornea as red and granular as the palpebral part of the membrane is usually, in milder forms of this disease.

The thickening of the palpebral conjunctiva, and the enlargement of its villi, vary considerably in different patients ; most frequently, as I have described, it resembles the granular surface of a healthy ulcer ; but there are two deviations which I think it proper to point out, as indicating some modification of treatment. The most

frequent variation consists in the enlarged villi being soft, flaccid, and spread out at their summits ; and in their having a flabby feel, and presenting a dull and pale red aspect. In the second variation, the conjunctiva is much less thickened or discolored ; its color being of a light but dull red, and its villi, which are extremely hard and pointed, projecting but very little.

In some instances the thickening of the palpebral conjunctiva is so great, that it protrudes through the palpebral aperture, and sometimes causes an eversion of the eyelid ; and, in other instances, one or more of the villi become enormously enlarged, or a morbid growth occurs in connection with one or more of them ; forming an excrescence which has usually a narrow base or point of attachment, and is expanded towards its free extremity. Such excrescences I have observed most frequently to arise from that part of the conjunctiva, by which the palpebral and ocular portions are continuous. I have also seen them, in this disease, attached to the semi-lunar fold of the membrane, or to the caruncle. Both of these last named parts usually participate in the chronic affection under consideration ; and become red, thickened, and villous.

Frequently, in the milder forms of this chronic affection, the patient evinces little or no ^{Constitutional} symptoms.

constitutional disturbance. But, in the more severe forms of the disease, or when it presents the variation of the soft and flaccid villi, there is usually a deficiency of general power ; and often irregularity or disturbance of some important function, as that of the stomach, liver, bowels, skin, uterus, &c.

Causes.

The heading of the section shews that I consider the disease, which I have described, as the result of purulent and catarrhal ophthalmia ; but I deem it important to explain how, and why, it occurs. I have shewn that these diseases commence in the palpebral division of the conjunctiva, and from thence extend to the ocular portion. They disappear in the contrary order ; leaving, first, the ocular part of the membrane, or that in which they appear last, and linger in the palpebral portion of the tunic, or that in which they first appeared ; and, in this division of the membrane, the morbid action may remain in so trifling a degree as to escape the observation of the careless practitioner, who may be satisfied with the perfect restoration of vision, independently of slight occasional interruption from a collection of superabundant secretion. In order to prevent the occurrence of the chronic affection, the palpebral conjunctiva should be carefully examined, when the acute disease appears to have been completely subdued ; and

if the membrane of the eyelid has not perfectly recovered its natural aspect, the remedies should be continued, until all morbid appearance be subdued. The examination should extend to the conjunctiva of both eyelids.

I have repeatedly observed, that according to the severity of the acute stage, and in proportion to the extent of exhaustion created by the treatment employed, has been the risk and rapidity in the developement of the chronic form. I consider, therefore, persons naturally of feeble power as somewhat disposed to this chronic affection, and especially such as have a scrofulous diathesis, and are prone to disorder of the mucous membrane.

Although acute purulent ophthalmia is frequent, in its most severe extent, in infantile life, we rarely, if ever, see a chronic stage of the disease going on to the extent I have described ; but it is not an uncommon sequel to the acute purulent ophthalmia, or severe catarrhal ophthalmia, in persons above the age of puberty.

For a length of time after the purulent disease had been brought extensively under the observation of many of our medical officers attached to the army and navy, that is, subsequent to our Egyptian campaign, the nature of this chronic affection was not understood; and numbers of

Persons
liable to.

our soldiers and sailors who had recovered rapidly, and as supposed perfectly, from the acute complaint, afterwards gradually lost their sight from the chronic disease ; and, being discharged from their duties, were placed on the pension list.

Mr. Saunders, the founder of our Ophthalmic Hospital, first discovered, I believe, the true character of the chronic disorder, and explained the mode in which it destroys the sight. He found, by examining the disease in its various stages, that the changes in the palpebral conjunctiva always preceded those in the ocular part of the membrane ; and observed, that the changes in the latter invariably commenced, as I have described, from the upper part of the sclerotic and cornea, covered by the mucous membrane ; and from this gradually encroached on the other parts of the tunic : eventually in some cases implicating the whole. His intelligence soon enabled him to detect, that the affection of the ocular conjunctiva resulted from a mechanical irritation, produced by the alteration in the palpebral part of the membrane ; or that the irregular villous surface of the conjunctiva lining the superior eyelid, by its friction on the opposed part of the mucous tunic of the globe, during the frequent and rapid movements of the eyelid, created an irritation

similar to that which would result from an extraneous substance, and that thus the disease in the conjunctiva of the globe was generated.

I have observed that this disease arises most Modifications. frequently in those persons who have been very actively treated, and much reduced during the acute stage; and it generally proves obstinate, in proportion to the feeble condition of the patient. Any other circumstances which tend to reduce the general power, previous to the occurrence of the acute disease, or subsequently, have a similar effect on the chronic stage. Thus, persons of scrofulous diathesis, and weak constitutional power, are prone to an obstinate form of the chronic disease. And, again, such as suffer from specific taint, as from gonorrhœa or syphilis, have this affection in an aggravated degree. It is also influenced by derangement of any of the principal functions, as of the stomach, liver, or alimentary canal in the male, and of the uterus, in addition, in the female.

The most obstinate forms are decidedly affected by the condition of the atmosphere; becoming worse when the air is loaded with moisture, and improving when it is dry and clear.

The first stage of the chronic disease, which Treatment. I would limit to the period before which the cornea becomes nebulous and vascular, or that in which the palpebral conjunctiva only presents a

morbid aspect, can usually be subdued with very moderate care. In the first place, due regard should be given to the state of the general power, and the most important functions should be enquired into. The condition of the circulation most frequently evinces a want of vigor; to correct which a good nutritious diet, with some medicinal tonic, may be required; but the exhibition of such a remedy would be improper, and perhaps injurious, if the functions of the digestive organs be deranged. The condition of these functions, therefore, should be examined; and if error be found in them, the first object should be to remove it; and when that has been corrected, then the dietetic and medicinal means calculated to increase the power of the patient should be adopted. I prefer the use of ordinary means, as of animal food, and any stimulus to which the patient may have been previously accustomed, to the employment of medicine; but, in many cases, both may be resorted to with advantage. When a medicinal tonic is required, the choice of it will depend much upon the cause of the deficient vigor of the patient. In ordinary cases, the preparations of bark will be found efficient. In such as are connected with a scrofulous diathesis, small doses of the preparations of iodine, with some mild bitter, will be more serviceable. In those suffering from venereal

taint, sarsaparilla, with minute doses of mercury, or with the preparations of iodine, may be most appropriate ; and, when connected with irregular uterine function, iron, in some of its combinations, will produce the most beneficial effect. The operation of the dietetic and medicinal agents will be much promoted by a pure and dry air, and moderate exercise. Whenever the restoration of the general health is very tardy, I believe that it may be expedited by an occasional change in the form of the tonic remedy.

As the patients are usually affected by the change of temperature, and of the state of the atmosphere, it is proper for them to be warmly clothed, and to wear flannel, or some substance which is a bad conductor of heat, next the skin.

The local treatment of this stage should consist in the application of astringents and stimuli, with the production of counter-irritation behind the ear, or above the eyebrow. The best astringents and stimuli, in my opinion, are the solutions of alum, of sulphate of copper, of acetate of lead, of bichloride of mercury, and of the nitrate of silver. A weak solution should be used at first, and the strength be gradually augmented, as the diseased membrane becomes accustomed to it. The strength should be such as to create a slight smarting, but not pain, when it is employed. If it creates pain of more than one

minute's duration, that particular solution should be laid aside, and a different one tried in its place; for I very rarely find that an application, which induces suffering of a continued kind, effects any good. Besides the solutions of the salts which I have mentioned, slightly stimulating ointments may be applied, with much benefit, to the margins of the eyelids, and to the canthi. Among the most serviceable of these forms of remedies are the nitrate of mercury, and the nitric oxide of mercury, as unguents; as also the common blue or zinc ointments. In obstinate cases, the cure will be promoted much by a frequent change of the local remedy, either as a lotion or ointment; and I seldom allow a patient, under these circumstances, to use the same lotion or ointment more than four or five days continuously. The treatment should be persevered in, until the conjunctiva of the eyelids has regained its natural appearance, which it will not do till sometime after the morbid secretions have disappeared: otherwise the case will be sure to relapse.

The disease having extended to the second stage, or having produced the nebulous and vascular condition of the cornea, requires much more care and patience for its relief. In this stage, the palpebral conjunctiva will be found to exhibit one of the three conditions I have de-

scribed: either the villi will be red, firm, and elastic, as the granulations of a healthy ulcer; or they will be soft and flaccid; or small, hard, and of a light color. When the first or last description of enlarged villi exists, the power of the patient is seldom much impaired; but when the second is found, the constitutional vigor of the patient is generally feeble. For the relief of the general debility, or for the correction of individual peculiarity of the system, the same remedies that I have recommended in the first stage, will be necessary; but the local means, which I have proposed, will hardly be found sufficient, when the disease has reached the second stage. They should, however, first be tried, and, if not productive of good effect, more powerful means must be resorted to.

Mr. Saunders, who first discovered this granular condition of the palpebral membrane, endeavoured to correct it by operative means; and employed either the knife or scissors to remove the prominent villi, and to render the surface smooth. I should suppose, from his adopting this treatment, that he considered the projecting parts to be really granulations, and that he did not recognise them as enlarged villi; otherwise, I think he would have adopted more simple means to subdue them. When I first became surgeon to the Ophthalmic Hospital, I tried the plan re-

commended by Mr. Saunders, with the utmost care and perseverance ; and, although the relief was in most instances considerable, by the operation of removing the irregular part of the membrane, yet it was rarely durable. The symptoms were usually mitigated for a few days, and then again became gradually augmented. Thus I have seen patients go on under this treatment for weeks and months together, sometimes improving, sometimes relapsing ; and altogether making a very unsatisfactory progress, until they became completely tired and ceased to attend.

At the same time that the granular projections were removed by violence, local stimuli and astringents were employed, and the principal functions and general power attended to ; yet still with little or no effect on the local disease.

After repeated trials of such measures, which had been first employed by Saunders, and, subsequently, by his successors, at the Ophthalmic Hospital, as well as by others who had been taught by him at the institution ; and after finding that the success was far from frequent, and being also fully convinced that the irregularity of the membrane resulted from morbid enlargement of its villi, and not from new formed bodies or granulations—I determined to try less violent means to reduce the enlarged villi, instead of re-

moving them forcibly ; for in watching the cases, treated after Saunders's plan, I observed that the surface rendered smooth by operation with the knife or scissors, often presented greater irregularity a few days subsequent to the operation ; but of a somewhat different character. The projections which, in the first instance, had been uniform in size and elevation, afterwards became much more irregular, both in shape and projection ; in fact, they were irregular granulations, springing up from the wounded surface, instead of the uniform enlarged villi of the mucous membrane.

23. The first case in which I tried the plan, ^{case.} which careful consideration had made me resolve to adopt, was one in which I had most carefully and perseveringly pursued Mr. Saunders's plan, through a period of about twenty months ; during which time I removed the prominent parts of the inner surface of the eyelid, at least fifty times ; being also attentive to the condition of the principal functions and general health. The patient herself was most regular in her attendance, and most patiently submissive to all that I directed and advised ; but, after twenty months of severe treatment, little or nothing had been gained as regarded the local disease. I then continued the general plan of treatment, which was of a tonic kind, and also the mild astringents

and stimulating local applications ; and I made frequent examinations of the diseased membrane ; and, whenever I found it to be of a deep red color and turgid, I directed a leech to be applied to the outer surface : but when it presented a lighter color and was softer to the touch, I had applied immediately to it a more powerful astringent than I had previously used. That which I applied most frequently, and from which the most good resulted, was the *solution of the diacetate of lead* undiluted. It was smeared upon the diseased membrane by means of a camel's hair brush, the part being exposed by eversion of the eyelid, and cleansed from secretion by a piece of dry lint. Thus the astringent came in immediate contact with the morbid projections. I also occasionally applied the sulphate of copper, in substance, to the granular surface under similar circumstances ; but it was used lightly, and not allowed to rest long enough in contact with the surface to produce an escharotic effect. Thus, whenever there was evidence of congestion, the vessels were relieved by the application of the leech ; and when this congestion had subsided, the contraction of the vessels was promoted, and the action of the absorbents excited, by applications having astringent and stimulating properties. A few weeks' trial of this milder plan of treatment, gave much encouragement for its con-

tinuance. A marked degree of improvement had taken place, and she had not suffered from any relapse of importance. The congested condition of the membrane was less frequently observed, and a diminution in it perceptible. The treatment was, therefore, persevered in, and was productive of very gradual, but certain improvement. The conjunctiva of each cornea, which at the commencement of the mild treatment had been universally nebulous and loaded with vessels carrying red blood, lost these vessels by degrees, and then began to recover its transparency. Several months, however, elapsed before she regained sufficient vision to venture out without a guide. At the expiration of about a year from the discontinuance of Mr. Saunders's plan of treatment, during which time the more simple plan was, with very trifling deviation, most strictly adhered to; scarcely a vestige of disease remained. Her vision was very good, but she required the aid of concave glasses for minute visual purposes, in consequence of the cornea having become so unusually convex, during the continuance of the chronic disease, as to have made her shortsighted.

During the treatment of this patient, who was a woman of between forty and fifty years of age, of large and flabby make, and of feeble constitutional power, a few other cases of the

second stage of this chronic complaint came under my care. They were placed under the same plan of treatment; and, with numerous others, whom I have subsequently had the opportunity of treating, nearly all have recovered. But I have occasionally modified my plan a little, inasmuch as I have now and then incised the tumid membrane very lightly, by transverse incisions, extending the whole length of the tarsus; not so deep however as to injure the tarsus, but only to open the vessels of the diseased conjunctiva of the eyelid. I have usually made three or four parallel incisions in each superior eyelid; and afterwards have encouraged bleeding from the part, by the application of a sponge moistened with hot water; and then as soon as the vessels have been pretty well emptied, I have taken the opportunity of applying a powerful astringent. I do not think that the incision is much more preferable than the leech; excepting that it is more rapid in its effects, and is not likely to create extravasation or swelling, which the leech is apt to do. I have never interfered by operation in these cases, with the ocular portion of the conjunctiva, but have found it invariably to regain its healthy character, as the disease in the palpebral portion of the membrane has been subdued. Some few cases have baffled all the science and skill I could command here;

the disease appearing to have been modified by some peculiarity of system, which has only yielded to a decided change of residence and occupation, for several months together; much as I have mentioned as requisite in some cases of simple ophthalmia.

As regards the large and flabby form of granulation, the cure is generally slow, in consequence of the power of the patients being usually much below par. Such cases, therefore, require careful general treatment, to promote the requisite degree of general power.

In the local treatment of this form, I have found the undiluted *solution of the diacetate of lead* more serviceable than any other application; whilst, in the treatment of the small, hard, and pale granulation, I have seen the best effect from the light application of the sulphate of copper.

Both in the first and second stages of this disease, I frequently prescribe counter-irritation by means of a blister behind the ears, or above the eyebrows. I do not have the blistered surface kept open, but the blister repeated. I formerly used issue or seton to the temple, and consider that they aid in expediting the cure in some instances; but, that in others, they are prejudicial by keeping up a condition of system unfavorable to a healthy action. I have seen the most severe and protracted cases recover without such assist-

ance; and in consequence of the deformity they produce, and the uncertainty of their beneficial operation, I have abandoned them as modes of treatment.

Besides the nebulous and vascular condition of the cornea, which I have described, we occasionally find ulceration of the conjunctival membrane over the cornea, which extends to the substance of the cornea itself; but I deem it unnecessary to enter upon this subject further at present, as I intend to treat fully of ulceration of the cornea hereafter.

Consequences. Under great neglect or mal-treatment of this chronic disease, the cornea, or its conjunctival covering, may become permanently opaque, in consequence of organization of the morbid deposit to which the disease gives rise; or, if ulceration takes place, indelible opacities usually result.

SIMPLE CHRONIC OPHTHALMIA.

A low degree of inflammation, affecting principally the conjunctiva of the palpebræ, and the meibomian glands.

Ophthalmia tarsi—ophthalmia senilis—psor- ophthalmia—blepharo-blenorrhœa.

Itching and pricking about the eyelids, with frequent sensation of grit in the eye; and occasional smarting, inordinate lachrymal secretion, part of which flows over the lower lid to the cheek; this last symptom is greatly increased on exposure of the organ to cold and damp, vivid or bright light; and, at the same time, the irritation and smarting are augmented—the vision is obscured by the constant suffusion from the increased secretion, and luminous objects appear as if surrounded by a colored halo; this is more particularly the case from candle or lamp light, when the patient usually complains most of dimness of vision; the cilia are agglutinated during sleep, by a thick secretion, which coagu-

lates on exposure to the air. Sometimes there is much intolerance of light, and the symptoms generally become greatly augmented with pain, when an attempt is made to use the eyes for minute purposes.

Appearances.

The eyelids appear red, more particularly about the free margins, which are frequently found excoriated; this state is usually greatest at the canthi, especially the outer one; and, from this, a line of excoriation often extends some distance towards the temple; it arises from the constant friction, to which this part is subjected, as the patient endeavours to remove the secretion, and arrest the smarting or irritation, by the hand or knuckle, which he passes across the palpebræ from the nose to the temple, whenever the eye feels uncomfortable. The cilia are partially loaded with a thick yellowish secretion. A few dark colored and tortuous vessels may be seen on the ocular conjunctiva; and when the lower eyelid is everted, its conjunctival lining is found to be thickened, villous, and of a dull red color. The lachrymal secretion covers the surface of the globe, and usually falls from the palpebral aperture freely, during the examination of the organ.

Constitutional symptoms.

Most frequently, those suffering from chronic ophthalmia exhibit deficiency of general power, and, often, important functional derangement;

and, in the most troublesome and obstinate form of the disease, there is great nervous irritability.

Exposure to cold and damp weather, especially Causes. to easterly winds.

Chiefly adults, whose occupation of necessity Persons liable to. exposes them to the causes mentioned—as coachmen, watchmen, soldiers, sailors, itinerant and street venders of goods, &c., &c.; and, especially, such as are addicted to intemperate habits.

This disease is materially influenced by the Modifications. state of the weather, being always much mitigated during a fine and dry condition of atmosphere, and aggravated, in cold, damp, and windy seasons. It is also much modified by a feeble and irritable state of system, and most cases under such circumstances, though not severe in appearance, are extremely distressing and annoying.

By far the most frequent and simple form of Treatment. chronic ophthalmia is easily remedied, by regulating the secretions, improving the general power by wholesome diet, or mild tonic medicines, by cleanliness of the organs, and the use of mild astringents and stimulants; besides which, the patient should be kept from exposure to the weather, if possible; or the eyes should be protected, out of doors, by goggles, or spectacles made for the purpose. The astringents and stimulants should be applied as lotions and oint-

ments ;—they should be made weak at first, and the strength gradually increased, as the surgeon thinks necessary ; the immediate effect should be a very slight smarting, not a pain ; the form of the astringent or stimulant must vary in different persons ; as what may agree with one, will not often do any good in another : the preparations which I find most serviceable, are the solutions of the salts of lead, zinc, alum, silver, mercury, &c., and the mercurial and zinc preparations as ointments.

The patient should be directed to cleanse the eyes and lids carefully in the morning with tepid water, and afterwards to use a lotion for about a minute ; and, during the day, to repeat the application of the lotion, for the same period of time, every four or five hours ; and, especially, after any exposure to the weather : at night, he should cleanse the eyes, and anoint the canthi and cilia very slightly, with some ointment, and allow this to remain on all night. It is advantageous, now and then, to change the form of the lotion or ointment, as the morbid surface soon becomes accustomed to one kind of stimulus. In cases of long duration, or those attended with intolerance of light, slight counter-irritation will aid in promoting a cure. Further benefit is sometimes obtained by the application of a leech or two to the surface of the eyelid ; or, by very

slight scarifications of the conjunctiva itself: these remedies are, however, only applicable to a turgid state of conjunctiva, and act usefully, simply by unloading the vessels.

Powerful stimulants and astringents have been, and still are employed very generally, by some surgeons, in these cases; and their influence is often very beneficial,—a cure being effected more speedily than by the plan I have recommended; but the powerful remedies are always productive of much suffering, and are very uncertain in their effects; which circumstances induce me to continue and recommend the more simple, slow, but sure means.

The less frequent form of this disease, which I would term irritable, requires some modification of the above plan; first, in the general use of anti-spasmodics or narcotics, and a cautious use of tonics; the object being to allay nervous irritation, and promote general power; almost all forms of tonics are apt to produce excitement, without aiding power, in persons subject to this irritative chronic ophthalmia; and therefore those remedies often occasion mischief instead of benefit. Further, the local remedies should be of the most simple kind, until the general nervous susceptibility is somewhat subdued; otherwise, astringents or stimulants, even when very weak, increase the local suffering more frequently than

they mitigate it;—narcotic applications are often serviceable in the irritative stage ; and also slight counter-irritation often repeated. Some cases will, however, best explain the principle and plan of treatment, which I find successful.

Case.

24. A lady between forty and fifty years of age, the mother of a large family, and naturally of a nervous temperament, but rendered morbidly so by reduction of general power, from illness and anxiety, became the subject of chronic ophthalmia ; attended with so much irritability of the eyes, that she could not employ them for ordinary purposes, without much suffering; there was not much external redness or excoriation, and but little viscid coagulable secretion, but constant annoying lachrymation and intolerance of light ; the palpebral conjunctiva was red, tumid, and villous. For above three years this affection continued, being always mitigated during summer, and worse during the cold and damp weather ; she had submitted to the ordinary plan of treatment—by leeching, blistering, purgatives, abstinence, and the application of numerous stimuli ; but never obtained more than slight temporary advantage, and frequently had experienced an aggravation of the disease after much depletion, or from the use of local stimuli.

When the disease had existed for the period I have mentioned, I was requested to see her ; and

found a condition of ophthalmia much as I have described ; she was pallid, the hands were rather cold, the pulse quick, feeble, and easily compressible ; the appetite indifferent and bowels irregular, with a bad state of tongue. I directed merely tepid water to be used as a lotion to the eyes, and some spermaceti ointment to be applied to the cilia at night, to prevent troublesome agglutination of the lids during sleep ; and I prescribed a small dose of calomel and blue pill each night, with a mild, warm aperient every other morning, and a simple, light, and principally farinaceous diet ; and this was persevered in for about six days, until the tongue became clean and the bowels more regular. I then ordered a more generous diet, and a small quantity of wine each day ; and prescribed small doses of sulphate of iron, with the compound galbanum pill, thrice in the day ; a mild aperient occasionally, and a small dose of mercurial at night, whenever the tongue should become foul ; at the same time I continued the simple applications to the eyes, and produced slight counter-irritation, every second evening, on the temples, by small mustard plasters. The irritability of the eyes gradually lessened, and I cautiously tried the use of some very slightly stimulating and astringent lotion to the affected parts, viz. a solution of acetate of lead, with a little of the wine of opium, and distilled

water, in the proportions of eight grains, half a drachm, and one pint ; this had a good effect for a few days, and then disagreed ; I then tried a weak solution of alum, of eight grains to the pint, which acted as an irritant ; but a solution of the bichloride of mercury, of only one grain to half a pint of distilled water, proved very efficacious by allaying irritation, and promoting contraction of the dilated vessels. The patient experienced two or three slight relapses, from sudden change of weather, or derangement of stomach and bowels ; but got perfectly well in the course of about five months : during which time the same treatment was steadily persevered in, with some slight occasional modifications. The lady has since paid much attention to her general health, and has maintained a proper degree of general power, and has not had any relapse now for more than five years.

Case.

25. An elderly gentleman fond of literary pursuits, and enjoying tolerable health, but possessing feeble power, was afflicted for several years with irritative chronic ophthalmia ; and during the greater part of each year, was incapacitated from using his eyes, except for the most ordinary purposes ; he had tried leeches, blisters, stimulants, astringents, purgatives, abstinence, &c., &c. ; but with little or no benefit. I was requested to see him, when he despaired

of obtaining relief ; I found the local symptoms and appearances such as I have described with a slow feeble pulse, much general languor, and depression of spirits, and irregularity of secretion from the bowels ; the appetite was very indifferent, and the tongue whitish, with a whitish-brown streak down the centre. By small doses of mercury, and an occasional warm aperient, I soon succeeded in obtaining a proper state of secretion from the alimentary canal ; when his appetite improved, and the languor and feeling of depression greatly subsided : during this period, only tepid water and simple ointment were applied to the eyes ; but as soon as the appetite returned, and the general power had been in great measure restored, by a generous diet, and small doses of quinine, I was enabled to employ a mild astringent lotion of the acetate of lead (half a grain to an ounce), for the distressing irritability of the eyes had nearly disappeared as the strength improved ; afterwards a weak preparation of the diluted ointment of the nitrate of mercury, (half a scruple to two drachms,) was used instead of the spermaceti ointment to the cilia, and in a few weeks he recovered so far, as to be able to recommence his literary pursuits without inconvenience, except upon any sudden change in the state of the atmosphere. The use of the same remedies pre-

served the eyes in a state of comfort ; but his excessive use of the eyes in reading, kept up a slight degree of redness for some time ; which, however, disappeared during the summer months. In the succeeding winter he experienced a slight relapse, which was connected with derangement of the digestive organs ; the old plan being put in force, soon remedied the evil again, and he has since for two years remained well.

I have seen several examples of this affection, in young and delicate females of nervous temperament, and usually accompanied with irregular uterine function. Many of these cases had been of months duration, and had resisted various modes of treatment ; but they all yielded readily to the plan, which produced regularity of the principal secretions, and promoted general power : small doses of iron, or of iron and zinc combined, being employed as a tonic, whilst the local remedies were at first, tepid water, and a simple ointment, with mustard plasters or small blisters ; and afterwards weak astringents or stimulants, as lotions or ointments.

This form of disease appears to be so much connected with, and dependant upon, a peculiar condition of the general health, that I am not surprised at the long continuance of the local affection, when the constitutional derangement is overlooked. I believe that the weak astrin-

gents or stimulants aid materially in promoting a cure in many instances ; although I have known several cases recover perfectly, solely under the influence of the general treatment, nothing besides tepid water being used locally.

During the continuance of the irritable stage particularly, and through the whole course of the disease, the eyes should be protected from cold and damp wind, and from bright lights ; and the patient should be forbidden to attempt any use of the organs, for minute purposes, during the progress of the cure.

Both entropion and ectropion, occasionally result from long continued, and neglected chronic ophthalmia ; but these consequences will be more particularly described, with those diseases.

OF SCROFULOUS OPHTHALMIA.

Definition. I do not consider that there is an inflammation of the conjunctiva, peculiar to scrofulous persons ; but that the ordinary affections, which I have described, are all occasionally modified by the peculiarity of constitution, which is denominated strumous or scrofulous. This is more especially the case, as regards the simple and pustular or phlyctenular affections of the mucous membrane, probably on account of their greater frequency ; but it also modifies the catarrhal and purulent diseases, and materially influences the operations of the remedial agents.

Synonyms. Ophthalmia scrofulosa—conjunctivitis scrofulosa.

Symptoms. Besides the symptoms which have been described, as indicating the ordinary varieties of ophthalmia, or inflammation of the conjunctiva, the scrofulous patient evinces excessive morbid sensibility of the retina ; so that the influence of a very moderate degree of light, greatly augments the suffering. He also usually complains of

more heat than is evinced in ordinary disease ; and the secretion is described as hot or scalding, as it passes over the cheek. These symptoms are commonly augmented at night, and especially during damp and cold weather. Occasionally the patients are troubled with fits of sneezing of many minutes continuance.

From the intolerance of light, the patient subject to this disease avoids the light as much as possible ; and children usually lay upon the stomach, and bury the face in the pillow, or endeavour to exclude the light more effectually, by the aid of the handkerchief or the hands, which they press closely on the affected organs. When exposed to the light, for the purpose of examination, the head is immediately sunk upon the chest ; but, if the hands be withdrawn, the palpebræ are found closely compressed together, and they are corrugated, by violent, and sometimes spasmodic action of the orbicular muscles. It is not unusual, further, to find the face distorted, by the action of the other superficial muscles of this region, not connected with the eye.

If the disease has been of long standing, the surfaces of the eyelids, and of the cheeks, are frequently red and excoriated, from the irritation of the scalding secretion, and from the friction and pressure of the hands of the patient.

If there be mischief going on in the transparent cornea, the lids are generally somewhat swollen and red, independent of the excoriation.

The examination of the eye is a matter of considerable difficulty, to one inexperienced in such matters; and in children, it requires frequently to be effected by force. *See mode of examining the eye.*

Appearances. On exposure of the surface of the globe, it now and then happens that there is very trifling evidence of conjunctival, or other ocular disease; there being little more than excessive morbid sensibility of the retina. Such cases, I consider, have with propriety been termed, *scrofulous morbid sensibility of the retina*; but I class them under the present head, as the separation would effect no practical good.

Most frequently when the globe is exposed to view, the ocular conjunctiva is found with its vessels injected by red blood, as in a case of simple ophthalmia; the palpebral portion of the membrane has its vessels also more numerously distended with the red fluid. In those instances in which the palpebræ are found tumid and red, there will also be discovered ulceration of the cornea. Generally, one or more superficial ulcers exist, but occasionally they extend into the texture of the cornea. At other times, but not so frequently, the ocular portion of the conjunctiva

exhibits partial injection of its vessels with red blood, as in pustular ophthalmia; the vessels being disposed in conical plexuses, with ill formed, or perfectly formed pustules or ulcers, at the apices of such plexuses. The perfect and well formed pustule is rarely found; but more frequently, a small vesicle, with a base of loose and ill conditioned fibrin, (*phlyctenula*,) unless when the disease has passed to the ulcerated stage, when small, irregular, and indolent ulcers present themselves. These pustules, or ulcers, are most frequently seated over the junction of the cornea and the sclerotic; sometimes over the sclerotic, near to the cornea; and now and then, over the cornea itself. I have many times observed some vesicles, or pustules, and ulcers, existing at the same time in one eye. The existence of this form may be wholly determined before the conjunctiva is exposed, in consequence of the constant sensation which is experienced of sand or grit being in the eye, with occasional sharp, prickling, or darting pain. When pustules exist in the ocular surface, there is always more redness, and thickening of the palpebral division of the conjunctiva, than when the indications of simple ophthalmia alone are found. The catarrhal and purulent affections are also modified by scrofula; but so rarely, as not to need especial notice here. Intolerance of light is,

however, the principal indication of such modification.

Constitutional symptoms.

Scrofulous ophthalmia is not only modified by peculiarity of system, but rarely, if ever, exists without some important functional derangement, under which the constitutional peculiarity is elicited. Most frequently, the skin is the part which has its functions disturbed. It is dry, harsh, and heated; its secretions being greatly diminished or arrested; and, in consequence, the patient becomes hot, feverish, and restless at night, and scarcely gets any sleep until day-break, when the attack of febrile action moderates. If the skin has its functions performed properly, those of the mucous surface of the alimentary canal are generally deficient, and the patient suffers from constipation of the bowels; has a foul state of tongue, and usually loss of appetite. Often, also, there are symptoms of gastric or hepatic derangement, as shewn by tenderness at the epigastrium, or on the right hypochondrium, with nausea, and sallowness of countenance. In children, the morbid condition of the abdominal viscera is evinced by a tumid, tense, and sometimes tender condition of this part, and by the state of the secretions, which are lumpy and slimy, or dark-colored, greenish, and very offensive.

The opposite conditions do, however, exist, as

regards these functions, which, instead of being diminished, become inordinately augmented. Thus some patients suffer from profuse perspirations, and others from looseness of the bowels or diarrhœa. The languid condition and pallid aspect of patients so affected, would almost lead the surgeon to suspect some cause of great exhaustion.

The conjunctival affection may, and probably Causes. does, in a large majority of these cases, result from the ordinary causes, which I have enumerated under the subjects of simple and pustular ophthalmia; but, when once induced, it becomes influenced, promoted, and sustained by some functional disorder, combined with the peculiarity of constitution. The local disease is also very much influenced by sudden change of weather; especially by damp and cold combined, which operates unfavorably on persons of a scrofulous diathesis.

As many of the local scrofulous diseases, this Persons liable to. form of ophthalmia is most frequently found in children, under or about the age of puberty. It is occasionally met with in the young adult; but rarely exists after the middle period of life.

In describing the constitutional symptoms, I Modifications. have mentioned the principal modifications of the disease, but I have farther to observe, that I have seen some cases in which the continuation and

severity of the ophthalmia were evidently depending upon irregular or suppressed uterine action, as the disease has disappeared on the proper establishment of such function. I have frequently seen this affection in children about the age of life at which the generative powers are becoming developed, and which seems to be promoted by the suspension of developement of uterine function ; and, in such patients, the ophthalmia quickly subsides when the functions are fully performed ; and, often, disease which has for many months resisted the ordinary modes of treatment subsides immediately under the circumstances I have mentioned.

Treatment.

The local disease being promoted by constitutional peculiarity, and generally maintained by some important functional disturbance, the first consideration should be the detection of such error ; but at the same time, the affected organ or organs should be carefully examined, in order to ascertain the precise character of the disease, and the extent of mischief it has inflicted ; so that the local action may be checked, if necessary, whilst means are resorted to, to correct the functional disturbance in other important organs. In the majority of cases, I rarely employ any other local means, than counter-irritation, by means of small blisters placed behind the ears, or above the eye-brows ; never, however, continuing

the irritation, by promoting discharge from the blistered surfaces by stimulating applications ; but I prefer the repetition of the blister, allowing one to heal before a second is applied.

As an application, I generally employ simple tepid water, or a decoction of poppy-heads or chamomile flowers. Now and then I prescribe a few leeches to the palpebræ, when the conjunctival vessels are numerously and very fully distended with red blood ; but I am very careful respecting the loss of red blood, being satisfied that scrofulous patients do not bear its loss well, as they are easily and rapidly reduced by such treatment.

In the general treatment of these cases, supposing the cutaneous functions to be diminished, the skin being dry, and the patient hot and restless, I prescribe small doses of mercury, combined with antimony ; the mercurial preparation, in form and strength, being selected according to the age and general power of the patient. Thus, to feeble patients, I frequently give a grain or two of mercury with chalk, and two or three grains of the compound powder of antimony ; whilst for others more robust, I prescribe similar doses of calomel with the antimony. The frequency of the dose, I vary, according to the urgency of the general symptoms ; directing the dose to be given every other night, every night,

or night and morning, as I deem necessary. Besides this, an occasional mild aperient is given, and the diet is directed to be of nutritious quality, and to an extent proportioned to the power of the patient.

The effect of the internal diaphoretic remedies is frequently very tardy, and sometimes fails; but in such cases, the operation can be facilitated or promoted by the aid of the warm bath, which should not, however, in my opinion, be used to such an extent as may induce exhaustion, but merely to excite cutaneous action. If the patient be immersed in a bath at the temperature of about 98° for ten minutes, I believe that the desired end will be promoted as speedily and as effectually as this means will generally afford.

Supposing, however, that the error in function exists principally in the alimentary canal, the remedies employed should be directed to that part which the symptoms indicate as most disturbed. Thus, if the disorder be principally gastric, a light farinaceous diet, with small doses of mercury, combined with some narcotic or mild alkali, may, perhaps, be advantageous, the bowels being regulated by a simple saline aperient.

If there be decided hepatic disturbance, the small doses of mercury, followed by more active aperient medicine, will have a better effect; but when there appears to be merely fæculent accu-

mulation in the bowels, with a torpidity in the mucous secretion, some drastic medicine, combined with mercury, will usually prove beneficial ; and, until such accumulation be got rid of, the food should be of the most simple and light quality.

When the opposite conditions of functional derangement exist, evinced by profuse perspirations or diarrhoea, considerable caution is requisite, in one part of the local treatment, which I have previously mentioned, namely, in the promotion of counter-irritation by blistering. In very young persons especially, laboring under these untoward symptoms, the general power is frequently so low, that slight counter-irritation induces an inflammatory action, which quickly passes into a state of gangrene and mortification. I have several times seen such effect from blisters incautiously applied in young subjects ; in whom the general power has been previously much reduced. Should counter-irritation be deemed necessary, under these circumstances of feeble power, a mustard plaster, or the solution of ammonia, should be used to an extent, only to produce redness of the surface, without creating vesication, or exciting inflammatory action. Immediate attention must be given to correct the important functional derangements. When there is excessive cutaneous action, the best remedy

that I know of, is the dilute sulphuric acid, with some preparation of bark ; as quinine, or the solution of yellow bark, or any of the aromatic bitters ; due attention being at the same time paid to the state of the bowels, and a nutritious and generous plan of diet adopted. On the other hand, when diarrhœa prevails, some aromatic absorbent should be administered, and perhaps some very small doses of mercurial, may be also required, to correct the state of the secretion, whilst the diet should consist wholly of farinaceous matter. It is dangerous in children, to combine the narcotic with the absorbent remedy ; but we may give minute doses of such preparations, by injection with starch or gruel, should the diarrhœa prove obstinate.

When there is reason to suspect, from the age and aspect of the patient, that there is a suspension of the uterine function, small doses of aloes and steel will prove serviceable, and their operation may be promoted by regular but moderate exercise. The same remedies will also be found generally efficacious, when the catamenia are suppressed. The remedies may be given singly or combined, and the dose regulated, according to the age and power of the patient.

Whatever may be the general or functional disturbances, the patients, suffering from scrofulous ophthalmia, should be protected from that

degree of light which is painful to them ; and I consider it better to place them in a darkened chamber, than to confine the affected organ by bandage or shade. It is also advisable to avoid exposure to cold air, and, especially, to cold and damp combined ; but in dry and mild weather, the patients often benefit by moderate exercise in the open air, although it is necessary at such times, to keep the eyes well protected from light, by bandages, &c. The susceptibility of these patients to the influence of the atmosphere, and sudden changes of temperature, renders it necessary to protect the surface by flannel, so as to give the advantage of a light but warm clothing. Woollen to the feet is as necessary, as flannel to the trunk.

Many surgeons employ more powerful local agents in the treatment of this disease than those I have recommended ; but, a very extended and impartial trial of such means, has induced me, by degrees, more and more to lay them aside, and to adopt the simple plan which I have detailed. I have seen obstinate cases much benefited, for a time, by the use of some severe counter-irritant, as the tartar-emetic ointment, issues, setons, &c. ; but I have seen much more evil than good result from these means ; and most sincerely believe that the disease is to be more effectually and permanently removed by the plan

I have proposed. To astringent and stimulating applications to the organs themselves, I have very strong objections ; arising from the observance of the frequent and serious mischief they produce.—I mean the common astringent and stimulating lotions, ointments, or drops. If they are employed at all, it should be when any general error of system, or important functional derangement has been removed ; and I believe, that the advantage frequently obtained by their casual use at such a period, has led to a very exaggerated idea of their efficacy.

It is very rarely that persons suffering from scrofulous ophthalmia bear the application of cold. It is sometimes grateful to the sensation when first used, but seldom fails to augment the suffering if it be continued. I am so satisfied on this point, that I always direct the application, medicated or not, to be warmed before it is applied.

Modifications.

The modifications are similar to those mentioned in connection with the different forms of ophthalmia ; but, in addition, we frequently have in the child cutaneous affections about the head and face, principally the varieties of porrigo ; for which, cleanliness and some simple absorbent, as starch, zinc, or bismuth, generally prove remedial.

Consequences.

In a few cases of long continued and severe

scrofulous inflammation of the conjunctiva, attended by great intolerance of light at the early period, I have known the sensibility of the retina frequently affected, and in one instance destroyed ; and I am surprised that loss of sensibility is not a more frequent consequence of that excessive and continued irritability of the retina, which we so frequently witness in these cases. This disease often leads to ulceration of the cornea, which gives rise to opacities of this texture ; and, further, a chronic stage is not an uncommon sequel of the acute affection.

In children we occasionally find various forms Combinatons. of porrigo affecting the head and face, during the existence of the ophthalmia ; otherwise, the pure scrofulous conjunctivitis seldom extends to the other textures of the eye than those which I have mentioned ; although the inflammation of the conjunctiva, attending other deeper seated diseases, is often in a measure modified by the strumous diathesis.

OF CHRONIC SCROFULOUS OPHTHALMIA.

Symptoms. THESE resemble those of the acute form, excepting that the visual power is more disturbed.

Appearances. In the most simple cases of chronic disease, the only differences, which can be observed, exist in the number and color of the vessels carrying red blood, which become less numerous, more tortuous, and of a darker or purplish hue, as the chronic form is assumed ; and if there be discoloration of the palpebræ, such discoloration is also of a dark character. Otherwise, whatever may be the nature of the affection in its origin, whether simple, pustular, or catarrhal, as it affects the scrofulous person,—under continuance, it usually implicates nearly the whole of the ocular portion of the conjunctiva, as well as the palpebral. In the former, the vessels become large and tortuous, and of a dark red or purplish hue ; and many pass from the sclerotic portion of the membrane to its corneal division : and whenever this occurs, the latter becomes thickened and

loses its transparency, especially in those parts in which the vessels are rendered apparent, from being distended by red blood. In some cases, but few of these vessels are to be perceived, whilst, in others, they are exceedingly numerous ; but the nebulous condition of the membrane is usually greater in proportion to the number of these vessels. This state of cornea is denominated *vascular and nebulous*, (see plate 2, fig. 4,) similar to that which results from the irritation of the granular eyelid as a consequence of chronic purulent or catarrhal inflammation ; but there is a very marked difference in the mode of distribution of the vessels carrying red blood to the cornea. In the case of granular eyelid, they are rarely found encroaching upon the cornea in any direction, except from the upper part, as I have previously described ; but in the scrofulous disease, they will be generally perceived passing over the sclerotic to the surface of the cornea, at nearly all points of the circumference of the latter, though the larger vessels usually take their courses from the directions of the recti muscles. Now and then also, we have a granular state of the eyelids. This, however, but rarely happens, unless the disease in its origin has been of a catarrhal or purulent kind ; though I have seen several examples, in which the granular eyelid has existed without such origin, and

where the disease has been throughout of a simple scrofulous kind. The existence of the granular lid is, even in these cases, denoted by the principal apparent vascularity of the cornea being from above.

When the scrofulous disease is either of trifling or extensive character, ulceration of the corneal part of the membrane is common ; the ulcers always, however, exhibit the indolent character, and sometimes extend into the texture of the cornea.

Constitutional symptoms. The patients with chronic scrofulous inflammation of the conjunctiva are generally pallid, with cold surface and extremities ; and of feeble state of circulation. In fact, there are other usual evidences of deficient power, though at the same time, most frequently there is some error in important functions, such as attends the acute stage of the disease.

Causes. Neglect of the acute stage, or too long a continuance of treatment which tends to reduce the general strength and power.

Treatment. The milder cases, in which the disease has not extended to the corneal portion of the conjunctiva, are usually remedied by correcting any error in important functions, by the means recommended in the treatment of the acute disease ; with improvement of the general power, by a good, simple, nutritious diet, and some mild medicinal

tonic—as bark, quinine, or iodine, in very small doses. These should not, however, be administered until the general functions are in good order, at which time also some slight local stimulus may be serviceable, if the conjunctival vessels are not otherwise disposed to contract. I prefer, as a stimulus in such cases, the wine of opium, or a weak solution of the bichloride of mercury, to be dropped into the eye, once in twenty-four or forty-eight hours, according to its effect. If the application creates a severe and continued pain, it rarely effects good, and should be laid aside; but if the smarting it produces does not exceed a few minutes in duration, leaving the eye tranquil, it may be continued usually with the best effect. Counter-irritation, in a very moderate degree, by small blisters applied behind the ears, may be resorted to when there is much intolerance of light, excepting when the powers of the patient are exceedingly depressed.

The more severe cases, in which the conjunctiva of the cornea has become affected, are, perhaps, some of the most difficult and obstinate which the ophthalmic surgeon has to deal with. They usually require great patience, and much skill to subdue them. The difficulty consists principally in maintaining a condition of general health, which is adequate to prevent repeated and distressing relapses; for very trifling func-

tional derangement, and any sudden atmospheric changes, are prone to occasion relapse, so long as the general power is feeble ; and both patient and surgeon are frequently distressed, and almost induced to despair of success, from a repetition of such disastrous events. It is not uncommon that a patient afflicted with such disease will go on improving for days, or perhaps for weeks together, and then suddenly relapse ; so that all the favorable progress of these few days or weeks, with its attendant good, may be in a few hours apparently destroyed. In these cases, then, the medical man should adopt all precaution to protect his patient from the influence of improper diet, of improper exercise or exposure, as also from the influence of sudden changes in the weather. The diet should be simple and nutritious, and consist principally of farinaceous matter, and a moderate portion of fresh animal food, with a small quantity of stimulus of beer or wine, should the patient have been previously accustomed to them; provided the condition of the alimentary canal admits of their use. The exercise should be moderate, and never to produce fatigue. The clothing should be light, but warm, and the surface of the skin generally protected by flannel or woollen clothing. It is imperative, in many of these cases, that the patient should be in a pure air ; but at the same

time in a situation where the soil is dry ; for we cannot promote the requisite degree of power in the atmosphere of closely populated districts.

As in the treatment of the acute disease, early attention must be given to the condition of the principal functions, and means taken to correct any important error in them, on the same principle as in treating the acute form ; and, as soon as the principal functions are in tolerable order, every means must be resorted to, to promote and maintain a proper degree of general power ; by improving the diet, and by administering medicinal tonics. The concentrated preparations of bark, as quinine, the solution of yellow bark of Mr. Battley, or small doses of iodine, with the hydriodate of potash and some mild bitter, will be found the best forms of medicine in young children ; and the two former may be advantageously combined with the dilute sulphuric acid, if there be any disposition to inordinate cutaneous action. I have good reason to recommend the solution of yellow bark, having witnessed exceedingly beneficial effects from its employment ; especially when there has been deficient power of circulation, with depression of mental and vascular activity, without any serious functional disturbance. Both in males and females, near the age of puberty, afflicted with this disease, but especially in

the latter, in whom the uterine functions are not developed, or are irregularly performed, small doses of steel or zinc, singly or in combination, are generally more efficacious than other forms of tonic medicines. The following case will shew admirably the influence of functional uterine derangement over the ocular disease, as well as explain further the principles of treatment, under such circumstances.

Case.

26. Some years since, a delicate, fair complexioned girl, sixteen years of age, was in attendance at the Ophthalmic Hospital for many weeks, having severe scrofulous ophthalmia of one eye; the disease had existed several months, and had extended to the conjunctival layer of the cornea, which had become thickened and vascular: defective uterine action had been detected when she first applied at the Hospital, and the ordinary remedies had been unavailingly employed. The severity and obstinacy of the case induced me to take the patient into St. Thomas's Hospital, that I might watch the case more carefully, and apply my remedies with more effect. About the time of her admission into St. Thomas's, some of our physicians had been trying the injection of a solution of ammonia into the vagina, to promote uterine function, and in a few cases with success: this led me to try the same remedy in my patient, with whom the ordinary means had

failed ; the result was most satisfactory ; uterine action was produced, and in three or four days the eye was free from disease : I never witnessed a more rapid change in any form of disease. Those who had the opportunity of seeing it with me, felt, as I did, most perfectly satisfied of the influence of the uterine function over the ocular affection.

In children the bowels may be regulated by a little rhubarb, soda, and columba combined, or by a little mercury with rhubarb ; the latter form being preferable, when the tongue becomes slightly loaded and the mouth clammy. In those patients approaching puberty, mild aloetic purgatives are the best.

It often happens, however, although the principal functions are tolerably well performed, and the appetite good, that the patient does not improve in a satisfactory manner, and experiences relapses from trivial, and occasionally not very obvious causes ; and in spite of tonic treatment and good diet, the general power remains depressed. Such cases require a careful and mild alterative course, consisting of very small doses of mercury, in addition to the plan previously pointed out ; and this alterative treatment may be adopted in conjunction with any of the tonic medicines that I have mentioned ; or sarsaparilla

may be employed, as in the alterative treatment of other diseases.

Locally, as a remedy, in all cases of chronic, as in the acute disease, simple tepid water is, I believe, the best; though stimulants may be sometimes applied with advantage. The employment of such means, however, should in my opinion be sparing, and only when the local disease does not subside in proportion to the improvement of the general health; and at the time of their use the general health should be good.

Counter-irritation also proves beneficial, under the same circumstances as I have already described in speaking of the simple form of this affection. Issues and setons are frequently applied, and are by some highly recommended in the treatment of this stage of disease. I grant that they will occasionally expedite the removal of the local affection, but I consider that a cure can be promoted with more certainty, and more permanently without them; as I have observed to be the case in the treatment of chronic purulent ophthalmia with the granular eyelid.

I am confident that the issue or seton is often prejudicial in children, or persons of feeble power, as exhausting power which it should be the endeavour of the surgeon to promote.

I will select two cases of recent occurrence, in proof of this opinion.—

27. A girl, sixteen years of age, of delicate frame case. and feeble power, born in Africa, her father being English and her mother African, was brought to me at the Hospital, suffering from an extreme degree of chronic scrofulous conjunctivitis. I found the conjunctiva in each eye loaded with vessels distended by dark red blood; the ocular portions were thickened and somewhat villous, the corneal parts being opaque, and exhibiting vessels filled with red blood, continuous from those of the sclerotic part of the membrane; so charged was the corneal conjunctiva in both eyes, that the color of the iris could not be detected; and the patient could only perceive light. The palpebral divisions of the conjunctiva were thick, red, and villous, especially as connected with the superior lid; and the surfaces of these portions had the granular character, which has been described as consequent upon chronic purulent disease. The girl had been for many months under treatment, and principally, by purgatives, mercurials, local stimuli in drops and ointments, blisters, leeches, and issues; and she had an issue in each temple when I first saw her. Examination of the general functions discovered to me a weak circulation, a deficient appetite, irregular bowels, and somewhat scanty, though regular uterine action. I immediately directed the issues to be removed, and that she should

have a good plain and nutritious diet, that she should take very small doses of mercury and sarsaparilla, with an occasional mild aloetic aperient ; and use only tepid water to cleanse the eyes, with a mild ointment at night, to prevent agglutination of the lids ; the medicines were occasionally varied, and she took the iodine mixture, the compound steel mixture, the solution of yellow bark, &c., as I considered change requisite ; that is, when the favorable progress appeared to be checked, or any peculiar functional disorder became more marked ; and, under such treatment, the disease gradually subsided, and her vision became perfect : she has not suffered from any increase in the convexity of the cornea ; nothing was used to the eyes but tepid water and spermaceti ointment ;—so that the cure was effected solely through the operation of general remedies ; and that, in the course of a few months careful management, with a supporting and corrective treatment, (as regards functions of important organs,) after a full, fair, but unavailing trial of depletory measures.

Case.

28. The second case, was in a boy of younger age, about nine, but also of feeble power : he was brought to me after eleven month's strict perseverance in the treatment, by purgatives, mercury, blisters, leeches, issues, and a great variety of local applications, stimulant, and sedative ; in

spite of which the disease had increased, and destroyed all visual power beyond the perception of light ;—the appearances being much as described in the last case. By my desire the issues were removed, and the nutritive and mild tonic treatment adopted, with careful attention to the state of the secretions. A very rapid change was effected, so that in little more than two months the conjunctiva and corneæ nearly regained their natural appearance, the vessels in the cornea disappeared, and only a slight nebula of the corneæ remained, which has since gradually lessened : he can now see well to read a moderate sized print, and can with little effort make out minute print.

I have seen many of such cases, but have never witnessed any good effects of a permanent kind from such remedies, as have tended to lessen general power ; sometimes temporary relief may be obtained from leeches, blisters, and issues ; and indeed the two former may be sometimes employed with advantage, when used sparingly and cautiously ; but in the majority of such cases, they are not necessary, and are very frequently prejudicial.

Chronic scrofulous conjunctivitis leads most Consequences. frequently to a nebulous and vascular state of the cornea ; and, under extreme neglect or improper treatment, the deposition in connexion with the corneal portion of the conjunctiva be-

comes so fully organized, that an indelible opacity remains, and usually of considerable extent. The chronic disease also occasions ulceration of the cornea, which produces dense opacities. There is, besides, a singular effect, which results from long continued chronic disease in the corneal part of the conjunctiva ; which in some measure nearly always implicates the cornea itself : it is an increase in the convexity of the latter texture, which materially affects the vision of the patient ; for a person suffering from this disease for a long period, having previously enjoyed perfect vision, finds, on his recovery from it, that he can no longer discern distant objects, or even those near to him, if they are minute, without the aid of a concave glass ; for the change in the convexity of the cornea has induced an alteration in the focus of the organ, and thus rendered the person short-sighted.

OF EXANTHEMATOUS OPHTHALMIA.

INFLAMMATION of the conjunctiva, with erysi- Definition.
pelatous affection of the palpebræ.

This disease is of rare occurrence, and is closely allied to the catarrhal form, and scarcely worthy of a distinct consideration.

At first much itching and occasional smarting, Symptoms.
with a sense of stiffness on moving the eyes; increased secretion, partly of a viscid character, which coagulates and loads the cilia, causing them to adhere, especially during sleep; a sense of heat in the palpebræ, and tenderness.

The eyelids are somewhat swollen, red, and Appearances.
shining, particularly at the margins; but the color is much lighter and the tension less, than is common in erysipelas; the cilia are partly loaded by a light yellow viscid matter, and some similar morbid secretion may also be usually found at the inner canthus: the palpebral conjunctiva is red, tumid, and villous; and the ocular part of the membrane is of a dirty yellowish red color, and elevated around the cornea by a

deposit of serum into the subjacent cellular membrane, (*serous chemosis*;) this deposit is greatest at the lower part of the circumference of the cornea, and least at the upper part, from the gravitation of the fluid in the cells; it is also often irregular, causing protrusion of the membrane, at several points, giving the appearance of vesicles.

Constitutional symptoms.

The power of patients, subject to this disease, is generally low, and they are liable to frequent disorder of stomach and bowels, with which the ocular affection appears to be principally connected; for, when the ophthalmia occurs, the tongue is generally much loaded, the mouth clammy, and the breath offensive; the bowels being at the same time constipated, with loss of appetite, and nausea.

Cause.

I consider derangement of the digestive organs, therefore, to be the principal cause of this form of ophthalmia.

Persons liable to.

I have never seen the disease in very young persons, but most frequently in patients advanced in life, and of irregular and intemperate habits.

Treatment.

An active drastic purge, with some mercurial, given every other day, for three or four times; and strict attention to a plain simple diet, with the local use of a slightly astringent lotion and ointment, will soon effect a cure. If there be much gastric uneasiness or fulness, an emetic will usually prove very serviceable.

The forms of ophthalmia, most common in the fevers which are attended by cutaneous eruption, are, the pustular and catarrhal, or muco-purulent: the latter commences with symptoms, so similar to those which usher in the purulent disease, that the medical man should be most watchful for two or three days.

In pustular ophthalmia, under these circumstances, there is generally some degree of the catarrhal form mixed with it: the palpebral conjunctiva is red and villous, and a whitish viscid secretion is discharged, which collects on the cilia and at the canthi. When the catarrhal disease appears, it presents the symptoms already described, and seldom produces much suffering: the secretion is thinner and whiter than in purulent inflammation; the swelling of the palpebræ, when it occurs, is never so great as to prevent a view of the cornea; the color is a pale pink; and the surface does not become tense or shining; some chemosis frequently takes place, at the lower part of the ocular conjunctiva, but it is usually from deposition of serum; the color is pale, and the part has a gelatinous red appearance. So long as the symptoms are not more urgent, than I have here represented, the diseases are to be controlled, by prudent use of the means I have directed, when treating of the cure of pustular and catarrhal ophthalmia.]

Purulent.

If the conjunctival affection begin with much pain and heat, and there be a rapid change in the palpebral part of the membrane, so that it become thickened, villous, and of a deep carmine color, and at the same time the secretion present a yellow tinge, there is every reason to dread the developement of the acute purulent inflammation; and it will most probably take place, unless means be pursued to check and subdue the first stage; a few hours' neglect, or hesitation, on the part of the surgeon, may be of most serious consequence, in permitting the disease to progress to the second stage; in which the eyelids become excessively tumefied, and the ocular conjunctiva is chemosed, so as to endanger the cornea.

Treatment.

Whilst in the first stage, the disease may usually be subdued by local bleeding, with leeches, and the subsequent use of warmth and moisture, with some slight astringent, as alum; the means appropriate to the cure of the febrile disease otherwise, as purgatives, abstinence, &c., will aid in subduing the local complaint; but should the attack commence with severe pain, and rapid tumefaction of the conjunctiva, with other symptoms of acute kind, and the circulation be full and incompressible, and the patient possessing good constitutional power, I can discover no good reason why the force of the circulation should not

be lessened, by abstraction of blood from the arm; it would probably lessen also the violence of the febrile disease, and expedite recovery: the surgeon should, of course, be extremely cautious not to remove more blood, than would be requisite to reduce the force of the circulation a little below the ordinary standard, and not so much as to produce prostration. I have seen this plan adopted in the first stage of purulent ophthalmia, occurring with small-pox, and with the best effect, generally, as well as locally. The remedy is, however, a hazardous one, and should not be adopted, without a perfect conviction of the power of the patient being good, and the action of the heart and arteries being above par, not in frequency, but in force.

The local disease comes on at various periods of the febrile attack; sometimes quite in the commencement; occasionally during its height; and, sometimes, as the severity of the general disease is passing off. General bleeding could be employed with more propriety, and probably with better effect, in the first instance, than in either of the latter, and would in my opinion, be altogether inadmissible in the last.

In the treatment of the second stage, with chemosis, I should adopt the same plan as if fever did not exist; excepting that I should be more cautious in the use of remedies, calculated to

reduce general power—local bleeding by leeches, and division of the chemosed membrane, might be effected without risk, in most cases.

The most severe cases occur with small-pox, and scarlatina, or scarlet fever; I have seen the disease developed during measles, but believe it to be very rare, and more so with cow-pox, chicken-pox, &c.

Rapid ulceration of the cornea.

During the continuance of, or subsequent to some of the exanthematous diseases, when the febrile action has been unusually severe, and has occasioned great prostration of the general power, inflammation of the conjunctiva sometimes arises, attended with ulceration of the cornea, by which this transparent texture usually suffers extensively; the progress of the ulcerative process being rapid. I have also seen a similar disease, in patients very much depressed by general fever of typhoid character, without any cutaneous affection.

I have generally witnessed such cases, when the destruction of the cornea has been very extensive or complete, and when science or art could do little to prevent destruction of the organ: I have, however, seen a few patients suffering from this form of disease, in time to preserve a large part of the cornea.

Through the kindness of Dr. I. F. Marson, of the Small-pox Hospital, who has lately called the

attention of the profession, to this form of ocular affection, as occurring in patients who have suffered from small-pox, (*vide Medical Gazette, May, 6, 1839,*) I have recently had an opportunity of seeing a case in the early stage.

29. The patient was a boy who had small-pox Case. very severely; Dr. Marson noticed the ophthalmia, on the fourteenth day from the appearance of the eruption: I saw the boy a day or two after the disease commenced, and found the ocular and palpebral divisions of the conjunctiva affected, much as they usually are in a mild attack of catarrhal ophthalmia; and a slight quantity of thin viscid mucous secretion, appeared on the cilia, and at the inner canthus; on the upper and inner part of the cornea, was a small transparent depression, or ulcer; the general circulation was extremely feeble, and the secretions in tolerably good order; I advised a good, nutritious diet, with ordinary stimulus, and tonic medicine, with attention to the secretions; and locally, a weak solution of alum, to be applied warm.

Before sufficient power could be promoted, the ulceration of the cornea, extended over more than one third of the surface, but it did not penetrate the anterior chamber; consequently a useful eye remains: the improvement in the local disease was marked, in proportion to the increase of the general power.

I have not seen sufficient of this form of disease, to satisfy myself whether the destruction of the cornea takes place by ulceration, or by a succession of small sloughs, such as I have described as extending the destruction of the cornea, after separation of the primary slough, caused by severe purulent ophthalmia. The decision of this point is not, however, of much importance, as destruction of the cornea, in either way, indicates want of power, and shews that the case is asthenic.

Treatment.

I would recommend that treatment should be such, as is best calculated to promote and maintain a good state of the general power; as, a nutritious diet, with the moderate use of an accustomed stimulus, tonic medicines, with proper regulation of the secretions, and the use of mild astringents, or stimulating lotions to the eyes. I should not advise the application of any powerful stimulus locally, until the general power is much improved; for, during the state of great debility, a strong stimulus may excite a degree of action, which the part is not able to support; and more extensive sloughing may result. A solution of nitrate of silver, injected upon the surface of the ulcer or depression, may be of service, when the general power is considerably re-established, and no healthy local action appears to take place.

EXCRESCENCES OF THE CONJUNCTIVA.

THESE, like the morbid growths from other mucous surfaces, in the neighbourhood of common orifices, are usually of a gelatinous or flesh-like consistence.

Polypi.

Synonyme.

The symptoms they give rise to, depend upon their situation : if arising beneath the palpebræ, Local symp- toms. they produce considerable irritation, by their friction, during the movements of the globe or eyelid ; the pain created, being similar to that, which occurs from the presence of an extraneous body ; but when attached to the semilunar fold of the conjunctiva, near the inner canthus, or to the surface of the caruncle, very little inconvenience results from them, unless they acquire considerable magnitude. It is in the latter situations, that I have most frequently seen them ; but occasionally also, in connection with the conjunctiva, at its point of reflection from the globe to the lid ; they are usually attached by narrow bases, and resemble, in color, the ordinary polypi of the nose,

or pharynx. They possess but little sensibility, and are, I believe, the result of a chronic inflammatory process.

Persons
liable to.

I have met with them in the eyes of persons of all ages.

Treatment.

The treatment to effect their removal is extremely simple: where the excrescence has been fully exposed, it should be elevated by a pair of forceps, and separated from the conjunctiva, by means of the scissors, or knife; after which, the nitrate of silver, in substance, should be applied to the surface of the wound, and weak astringent lotions frequently used; such as have been previously recommended, in the treatment of simple chronic ophthalmia.

Consequences.

Unless very much neglected, they seldom produce irritation, and the patient is usually led to seek medical advice, more from the inconvenience and deformity they may occasion, than from any suffering they may produce.

PTERYGIUM.

PTERYX, a wing.

Derivation.

Until this disease has reached a considerable extent, the patient is rarely induced to seek relief, as it usually arises without uneasiness or suffering, being extremely slow in its progress; but, after a time, the vision becomes impaired, and gradually destroyed, for all useful purposes.

The disease presents, most frequently, the appearance of partial thickening of the ocular conjunctiva, with several large vessels ramifying upon the diseased mass. The morbid portion of the membrane has generally a conical form, the base of which corresponds to the orbit, and the apex is directed towards the cornea, or stretches some distance upon this transparent texture. I have, in some few cases, seen the base of the pterygium opposed to the circumference of the cornea, whilst the apex was directed towards the orbit.

Unless affecting the conjunctival covering of

the cornea, the disease is only remarked by the slight deformity it creates, as it does not occasion any impediment to vision. Pterygia are most frequently seen, extending from the fold of the conjunctiva at the inner canthus of the eye.

Fleshy.

More rarely, the aspect of the diseased part is florid and fleshy. In the former case, when it appears merely as a thickened state of the conjunctiva, it has been termed *membranous pterygium*; (*see plate 8, fig. 1*;) and in the latter instances, when florid and flesh-like, it has been denominated *muscular*. (*See plate 8, fig. 2.*) I have seen more than one in the same eye.

Causes.

Pterygium appears to result from continued chronic inflammation, as evidenced by the slow growth and increased vascularity of the part; it is very frequent in warm climates, but extremely rare in this country, or in those having a latitude more distant from the equator.

Persons liable to.

I have never seen this disease in persons under the age of puberty, but most frequently in those above the middle period of life.

Treatment.

As long as the pterygium does not extend to the surface of the cornea, the object should be to retard and prevent its progress, which can be best done, by the use of local stimuli and astringents, as proposed for the relief of other chronic affections. If, however, the surface of the cornea has become implicated, vision must

be more or less affected ; and more effectual means to annihilate the complaint must be resorted to. I have repeatedly tried the various stimulating and astringent remedies, but without being able to accomplish more than the arrest of the disease. The removal of the morbid part is, therefore, what I should recommend, and in the following manner :—

A slender bladed knife should be passed between the pterygium, and the sclerotic coat, having the cutting edge towards the cornea ; the pterygium should then be separated from the sclerotic, as far as the margin of this transparent structure ; in which situation the edge of the knife should be made to divide the morbid texture, so as to leave the portion in connection with the cornea untouched ; the flap thus formed over the sclerotic, should be elevated by a pair of forceps, and the separation of the pterygium from the globe completed, as far as its base or outer attachment, when it should be cut off, either with the knife or scissors, close to the sound membrane ; a little care is afterwards requisite to prevent an inflammatory process, and a reproduction of the disease ; and I have usually found the simple astringents, as the solution of alum and of the acetate of lead, sufficient for this purpose, keeping the patient perfectly quiet, until the healing process has been completed.

In a short time after the operation, the portion of the pterygium, which may be left over the cornea, gradually disappears, and the part re-assumes its natural character ; for having lost its direct means of support, the morbid deposit becomes absorbed. Should the operator incautiously excise the part of the pterygium, which extends upon the surface of the cornea, an opaque deposit will take place during the reparative process, which will prove as serious an impediment to vision, as the pterygium itself.

OF FRÆNA.

WHEN opposed surfaces of the conjunctiva become destroyed by ulceration, or by the action of escharotics, during the process of cure, the granulations frequently inosculate, and a firm attachment is thus established, between the lid and globe. Such cases are common from the introduction of lime between the palpebræ and globe ; the vitality of the parts is first destroyed, by the immediate contact of the escharotic substance, and subsequently separates in small sloughs ; granulations then arise, and, in spite of great care, they usually adhere, and connect the palpebræ and globe together ; after the healing process is complete, the new formed matter yields a little to the motion of the globe and lids, so as to form a firm band between the two. (*See plate 8, fig. 3.*) The appearance of such a band is usually opake, but exhibits several vessels carrying red blood on its surface ; occasionally it encroaches on the cornea, and sometimes

has a triangular figure, somewhat like that presented by a pterygium.

Causes.

They usually result from accident, and are therefore occurring at all periods of life.

Treatment.

For such disease, I believe there is little that can be done, either by medical or surgical aid ; —after the occurrence of the injury, which I have described as giving rise to this affection, I have repeatedly tried, by the greatest care and attention, to prevent the formation of *fræna* ; and although, in some instances, I have succeeded in preventing the immediate inosculation of the granulations, yet I have never been able to prevent the formation of a *frænum* ; it has appeared to me, that a contraction of the cicatrix takes place after the healing process is completed, similar to that we so frequently see in the extensive cicatrices, formed after burn of the integuments. I have, with the utmost pains and patience, effected the removal of such bands, and watched the after process of cure ; but am now convinced, after repeated trials, that such operations are worse than useless, as they cannot be accomplished without severe suffering, and do not eventually at all benefit the patient. In two cases, after excising the band or *frænum*, I kept a very thin and smooth piece of silver constantly between the eyelid and globe, so as effectually to prevent inosculation of granulations, as the surfaces healed.

When perfectly healed, much good appeared to have been effected ; but, in less than six months, contraction had taken place of the new formed matter, and fræna were developed as bad as, or worse than those which I had removed.

OF ADIPOSE TUMORS OF THE CONJUNCTIVA.

THERE are no subjective symptoms which indicate such affection ; but from the unpleasant appearance or objective symptoms these tumors present, the patient is induced to seek surgical advice : when in the position, between the cornea and the inner or outer canthus, in the transverse diameter of the globe, a yellowish colored body or bodies may be perceived ; I have never seen more than one tumor, in either position, but have frequently observed one to the inner, and another to the outer side of the cornea, in the same eye. The swellings vary in magnitude, from a very small size indeed, to the bulk of about half a sweet pea ; and the conjunctiva, above and immediately about the deposit, is usually slightly thickened, somewhat opake, and has more red vessels apparent in it, than is natural. The tumor consists of a deposit of fatty or adipose matter, between the sclerotic and conjunctiva, in the cellular

tissue, but more intimately connected with the latter.

The growth may be checked by mild astrin-^{Treatment.} gents, but they very rarely become removed by absorption, so that they cannot be got rid of effectually, except by the knife or scissors. The excision is not attended with any risk, and is successful in getting rid of the diseased deposit.

The removal is best accomplished, by raising the tumor, and its conjunctival covering, with a curved needle, and cutting through its base, with a pair of curved scissors.

OF CUTICULAR STATE OF CONJUNCTIVA.

Symptoms. AN imperfect state of vision, with a sensation of extreme dryness of the eye, and a difficulty in moving the lids, which feel stiff. The vision is in degree cleared, and the stiffness removed, on the patients weeping or moistening the part.

Appearances. Usually, some degree of entropion or ectropion exists ; most frequently the latter, so that a large portion of the conjunctival surface is constantly exposed to the influence of the air ; the surface of the membrane is opake, dry, and dull, not reflecting the light, and resembles in appearance the common cuticle.

Causes. Constant exposure to the air appears to be the more frequent cause of this change ; it arises also from the continued irritation of the cilia produced by entropion.

Case. 30. The most extensive case that I have seen, was in a woman between forty and fifty years of age, who had suffered from entropion for many years ; nearly the whole of the conjunctiva in

each eye, presented the alteration I have described ; that covering the cornea, as well as that connected with the sclerotic and palpebræ. The membrane had become so much contracted, as to prevent the cure of the entropion by operation, and it had so far lost its sensibility, that the friction of the cilia did not occasion any suffering. Immediately after crying she could distinguish large objects, but otherwise she could only perceive light.

The only means of arresting such a change, Treatment. and of restoring the healthy condition of the conjunctiva, are by operations—either for the cure of the ectropion, or entropion ; whichever may exist. Perhaps something might be effected, by the frequent use of a mild mucilaginous application.

OF ACCIDENTS AND INJURIES TO THE CON-
JUNCTIVA.

OF ECCHYMOSIS.

VIOLENCE to the organ, frequently occasions effusion of blood, between the conjunctiva and sclerotic, from rupture of some minute vessels ; and the same effect frequently follows severe efforts of straining or coughing, especially the latter. Thus patients suffering from hooping-cough, and elderly persons suffering from chronic bronchitis, or pneumonia, attended with distressing cough, experience extravasation of blood, beneath the conjunctiva of the globe. When the ecchymosis is produced, either by a blow, by straining, or by cough, it seldom is very extensive ; though I have seen several instances, in which the sclerotic has been perfectly hid—the cellular tissue, between it and the conjunctiva, being filled with red blood. The ecchymosis itself is a matter of little importance ; but when

the result of external violence, it is often accompanied by other serious mischief, which will be elsewhere described.

The discoloration from ecchymosis, is easily ^{Appearances.} distinguished from the redness which attends inflammatory affections of the conjunctiva, by its very sudden appearance, by its uniformity of color, and by the abrupt termination of the discoloration, when it is partial ; and the closest inspection cannot detect the vessels, which are so easily to be perceived, when the discoloration results from inflammatory action.

On the first appearance of the ecchymosis, ^{it Treatment.} is advisable to apply cold lotions, and to keep the patient erect for a few hours, to promote the coagulation of the effused fluid, so as to prevent further extravasation. Whilst fluid, the blood has a florid appearance ; but, as soon as it becomes coagulated, it acquires a dark purple color. When the coagulation has taken place, if there be pain, or symptoms of inflammation, a few leeches should be applied to the eyelids, and the use of cold continued, besides the administration of purgatives, and a diminution of diet. Such symptoms being relieved, the next object is, to promote absorption of the extravasated blood ; and this is to be effected by the application of stimulants—as the solutions of the sulphate or acetate of zinc, or some spirituous ap-

plication applied as lotions. I usually employ the former, and find them generally to be efficacious; but when the extravasation is extensive, or the action of the absorbents very tardy, I have recourse to a light poultice, made by mixing some of the black-briony root, scraped finely, with a little crumb of bread. This is placed in a muslin bag, over the palpebræ, for several hours together; and, usually, it has an excellent effect in promoting the action of the absorbent vessels.

OF INCISIONS OR LACERATIONS OF THE
CONJUNCTIVA.

DIVISIONS of the conjunctiva only, by acute or blunt instruments, are seldom productive of any further consequence, than a simple form of ophthalmia, the treatment of which I have already described and explained; and I have only further to add, that, if any portion of the membrane becomes displaced, at the time of the injury, it should be carefully replaced; and confined, if necessary, by a fine suture, during the early period of the treatment. The surgeon should be careful, however, to withdraw the suture, as soon as the parts are sufficiently adherent to retain their position. Subsequently, the case becomes one of simple ophthalmia.

OF INJURY OF THE CONJUNCTIVA FROM
ESCHAROTICS.

INJURY of this kind is most frequently produced from the contact of lime or mortar, accidentally introduced into the eye. But we occasionally see cases, in which the injurious matter is a powerful acid, as the sulphuric or nitric, or a portion of heated metal, as iron or lead. The effect of all these is nearly the same, as regards important mischief; namely, destruction of such portions of the membrane, as are brought into direct contact with the foreign matter; and we usually find corresponding, or opposed portions of the ocular and palpebral divisions, to suffer to the same extent; and, most frequently, the injury takes place at the lower part of the globe, and on the under eyelid; though, occasionally, the superior part, and upper eyelid, are involved in the mischief.

Symptoms.

There is little risk of any mistake in the nature of such cases, as the patient is generally

aware of the cause of the injury ; but, otherwise, the sudden occurrence of acute pain, with heat and swelling, with a distressing sensation of the presence of extraneous matter in the eye, with a profuse and continued discharge of tears, and constant burning and smarting, would indicate the nature of the affection.

These symptoms will vary, somewhat, according to the form of the escharotic, which produces the mischief.

If it be lime, portions of the substance will be From lime. found adhering about the margins of the lids, and on the conjunctival surfaces ; and those parts, on which these particles rest, will be opake and thickened, whilst the surrounding parts are in a condition of ophthalmia. Generally, the thickened and opake portions are much more extensive, than the bulk of extraneous matter, which is found in contact with them ; for the excessive discharge of conjunctival and lachrymal fluids, quickly gets rid of a large portion of the irritating matter. Often, very few particles indeed can be found, as the patients, as soon as possible, resort to the application of warm or tepid water, to cleanse the organ, and relieve the severity of suffering. Still, however, they rarely succeed in cleansing away all the foreign substance.

If it be a strong acid, which has occasioned From acid. the injury, the surface of the palpebræ and of

the cheek, as well sometimes as some part of the clothing, exhibit the effect of the escharotic; the former being blistered, or swollen, or red; and the latter rendered rotten, or perfectly destroyed. The conjunctiva has, in this case also, the swollen and opake appearance, though not so strongly marked as from the influence of lime, while the other portion of the membranes are in an inflamed state. The pain in such instances, though equally acute at first, as when the mischief is produced by lime, becomes more speedily mitigated, especially under the use of free ablution, to which the patients naturally resort.

From metal.

If heated iron or lead be the injurious substances, the tegumental surfaces of the lids and cheeks also frequently suffer; but the marks of injury, on these parts, are generally more defined than when produced by acids. The effect upon the conjunctiva is nearly similar to that, occasioned by lime, but the suffering is less severe and of shorter duration, unless any quantity of the extraneous matter lodges on the conjunctival surface. The parts first touched by the heated metal become opake and swollen, and the surrounding parts inflamed. Lead, in a fluid state, will not destroy the vitality of the conjunctiva, unless its heat be very great; for I have several times taken out, from beneath the palpebræ, portions, weighing many grains, which had evidently

entered the eye in a fluid state, as they have been perfectly moulded to the surfaces of the globe and palpebræ ; yet the conjunctiva has remained free from all injury, except slight inflammatory action.

Immediately after the introduction of lime or ^{Treatment.} mortar into the eye, great relief will be obtained by the free ablution of the organ with weak vinegar and water, in the proportion of about a tea-spoonful of the former, to half a pint of the latter. It should be used warm, and if the means are at hand, by injecting a portion of it into the eye, its beneficial effects will be increased. Otherwise, some of the solution may be dropped into the eye. The good effects of the application result from its chemical action on the lime, which destroys its caustic property, and renders it soluble, so that it no longer acts as an irritant. After injury from acids, some alkaline preparation, in solution, will be most serviceable, as a solution of the carbonate of soda or potash ; or, in case such are not to be readily got at, common soap and water will prove a good substitute. These applications will be most serviceable if injected into the eye, or dropped freely upon the conjunctiva.

When heated metal has occasioned the mischief, all that can be done immediately, is to remove the particles that may adhere to the con-

junctional surface, or lodge beneath the eyelids. Subsequently, in each case, the treatment should be similar, and should consist in the application of leeches, and the use of cold, if most agreeable to the patient's feeling, to check the inflammatory action ; or in fomentations with hot water or decoction of poppy-head. I prefer the latter to the use of cold, as it tends to aid the process which must eventually take place, for the separation of such parts, as have had their vitality destroyed, by the action of the escharotic, that is, the ulcerative action with suppuration. At the same time, the patient must be placed on very moderate diet, unless he evinces great feebleness of general power ; in which case a better diet must be allowed. It may be necessary also to act a little freely upon the secretions of the mucous membrane of the intestine, and upon the skin. Now and then, in young persons, who possess full health at the time of the accident, it may be prudent to lessen the force of arterial action, by taking away blood in the ordinary manner, by venesection. After a few days, the sloughs, occasioned by the dead matter, separate, and the exposed surfaces begin to granulate ; and, as there are usually granulating surfaces, both on the globe and on the palpebræ, opposed to each other, there is a risk of the granulations of the two parts uniting, unless

great care be taken to obviate it. The parts should be therefore exposed, three or four times in each day, and any junction of granulations should be destroyed by a probe; and this practice must be continued, until a new mucous or secreting membrane be formed. The new formed structure is usually thicker, and more opake, than the original membrane; so that, if the corneal surface has suffered, an indelible opacity usually results. Another evil also follows the injuries, which the utmost care and attention of the surgeon cannot prevent; it is the contraction of the new formation, as it becomes organized, so as to produce a frænum or band between the surface of the globe and the eyelid. This has usually been considered to result from negligence during treatment; but the observation of, and careful attention to many cases, have satisfied me, that it is frequently occasioned by an action of the part, which the surgeon cannot control. I have witnessed several instances, in which the healing, after the separation of the sloughs, has left an even and sufficiently extensive surface; but I have further observed the parts gradually to contract and thicken, so as to form short and tough bands.

OF THE INTRODUCTION OF OTHER STIMULATING MATTERS TO THE EYE.

I HAVE frequently seen cases in which matters possessing highly stimulating, but escharotic properties have accidentally occasioned injury, when placed in contact with the conjunctiva; such as the powders of euphorbium, of cantharides, of pepper, of hellebore, &c. The immediate effect of such accidents has been acute pain, with considerable inflammatory action.

Treatment.

The first and principal object in treatment should be to cleanse the eye from all foreign particles; and, subsequently, to adopt the remedies proper for the relief of simple conjunctival inflammation.

A N A T O M Y
OF THE
C O R N E A.

CORNEA pellucida, named from its firmness—*Synonyme.*
(*corneus*, horny.)

The cornea completes the external proper tunic of the globe, of which it occupies the anterior fifth, filling up the aperture in the anterior part of the sclerotic. The cornea is anteriorly convex, rather more so than the sclerotic; posteriorly it is concave, and, occasionally, its transverse diameter exceeds a little the perpendicular.

It is very firm, smooth, and transparent.

It is composed of thin transparent laminæ, placed one before the other, and united together by very fine cellular tissue, which contains a small quantity of limpid fluid.

It is rather thicker than the middle part of the sclerotic coat.

The connexions of the cornea are, by its anterior surface, to the conjunctiva which covers it; by its posterior surface, to the membrane of the aqueous fluid.

Its circumference is obliquely formed to adapt it to the anterior edge of the sclerotic, and the obliquity is therefore contrary to that of the latter; so that the anterior lamina of the former, terminates sooner than the posterior lamina;—the degree of obliquity varies, corresponding to the variations in the termination of the sclerotic, being sometimes considerable, sometimes trifling; most frequently it is equal or uniform, but now and then more obliquity exists in one part, than in another, of the termination of the circumference; thus it is sometimes found more oblique at the nasal and temporal edges, than above and below; or, on the contrary, greater above and below, than at the temporal or nasal edges.

We cannot, from simple anatomical examination of the cornea, trace any organization—as neither arteries, veins, nor absorbents can be detected; but pathological investigation shews us its blood vessels, and enables us to trace them, principally, from the anterior or conjunctival layer, and, slightly, from the posterior membrane, or that of the aqueous humor; and further shews us, that these have slight connection with the sclerotic vessels.

From the firmness of the cornea, and the resistance it affords, it is admirably adapted to protect the deeper parts; whilst its transparency, its form, and its density, render it a highly important part of the visual apparatus.

THE MORBID CONDITIONS
OF THE
CORNEA.

THE cornea is liable to the following morbid changes.

1. To inflammatory action in various degrees, leading to depositions of fibrin, or pus ; or to mortification and ulceration, as a consequence of the two latter.
2. To inflammation of the substance of the cornea, extending to its conjunctival covering, and causing deposit of earthy matter.
3. To affection of both the same textures, with effusion of serum between them.
4. To ulceration, from extension of conjunctival disease to it—this being one of the most frequent affections, and followed by a new opaque deposit.
5. To mortification from strangulation ; as I have already described, under the subject of purulent ophthalmia.

6. To destruction of transparency, or loss of vitality, from the influence of chemical agents, principally of an escharotic quality.
7. To alteration in figure, with or without change of structure.
8. To a partial loss of transparency, without any evidence of morbid action.

OF INFLAMMATION OF THE CORNEA, WITH
 EFFUSION OF ADHESIVE MATTER,
 OR FIBRIN.

CORNEITIS.

Synonyme.

The disease often commences with mistiness or dulness of vision, without any other subjective sign; but, most frequently, there is some dull pain of intermittent character, and slight tenderness of the globe; and, in some instances, the pain and tenderness are severe and aggravated at night; and, occasionally, there exists a considerable degree of intolerance of light, and profuse lachrymation, especially on exposure of the organ to the light; the patient also complains, in some cases, of a sense of grit or sand on the conjunctiva. In the slightest cases, the vision is but little obscured, and objects are seen as if through a thin fog; but, in severe cases, the patient sometimes cannot do more than distinguish light from darkness.

A slightly nebulous or hazy condition of the cornea, alone indicates the most simple form of Appearances.

this disease ; and this nebula does not occupy, usually, the entire structure, but, perhaps, extends through half or more ; and, when thus partial, it does not present a defined edge ; but the cloudiness, gradually and imperceptibly, blends with the natural transparent structure. I have many times observed the condition above described, without any evidence of increased action, by distention of the conjunctival, sclerotic, or corneal vessels with red blood.

In most cases, however, there exists a general cloudiness of the cornea, though not of equal density ; for, generally, one or two spots (of oval or rounded figure, if near the centre of the cornea ; or semilunar, if near its circumference;) appear most dense, but not defined—the margins being blended with the general haze. Further, the conjunctiva exhibits many vessels filled with red particles of blood, and the larger vessels may be usually found taking their courses to the margin of the cornea, near to the seat of the most dense opacity, or that in which the greatest deposit of fibrin has taken place : near the same position, some of the vessels of the sclerotic coat may also be frequently observed, minute, straight, and of dull red color, radiating from the margin of the cornea.

When the disease is more severe still, the general nebula, and the more opake spots on

the cornea are increased in density, the conjunctival redness is augmented, and also that of the sclerotic ; so that, in some cases, the vessels of the latter form an irregular zone around the cornea ; at the same time, some part of the margin of the cornea,—(generally that which approximates to the most densely opake part of the cornea, and appears to be fed by the greatest number and largest of the vessels in the sclerotic portion of the conjunctiva,)—has an appearance as if some blood was extravasated between the conjunctiva and cornea : this appearance usually exists quite at the margin of the cornea, (*see plate 2, fig. 2,*) and presents various extents, seldom occupying more than a sixth or fifth of the circumference, but sometimes much more ; and, in rare instances, it embraces the entire margin of this structure : it seldom extends more than a few lines from the margin of the cornea, towards its centre ; and, when partial, has a crescentic figure, following the circumference of the cornea. On close inspection with the naked eye, but particularly with the aid of a moderate magnifying power, this redness may be discovered to result from a congeries of minute vessels, seated principally in the conjunctival layer of the cornea, but also penetrating the substance of the cornea itself ; this plexus of red vessels may also be perceived, distinctly, to be continuous with the larger

vessels, (already described,) which ramify in the sclerotic portion of the conjunctiva. In some cases, besides the vascular plexus, on the margin of the cornea itself, a line of a deep red color is apparent beyond the margin of the cornea, but in close connection with it, and usually occupies an extent, rather greater than that, which is occupied by the plexus on the cornea, immediately without which it exists: it is generally so narrow, as to require a close inspection to detect it; it has a crescentic figure, corresponding to a portion of the circumference of the cornea; its edge, opposed to the sclerotic, is well defined, but that next to the cornea, much less so, being blended with the vascular plexus on the latter texture; the extremities of the line are always gradually shaded off. This line results from the injection of the vessels of the conjunctiva, which covers the anterior termination of the sclerotic, (when it overlaps the outer margin of the cornea,) and of the portion of the sclerotic also, which is supplied from the conjunctival vessels; and not from the same set of vessels which supply the sclerotic generally.

When inflammation affects the iris, choroid, or aqueous capsule, and the sclerotic—a small grey or ash-colored line may be sometimes perceived in the position, in which this narrow red line exists occasionally, in acute corneitis. *See sclero-iritis.*

The disease itself does not give rise to any marked constitutional disorder, though it is usually connected with some important functional derangement, especially of the skin.

Corneitis generally appears without any obvious reason, but is often produced by the common causes which occasion inflammation in the other textures of the eye, as damp, cold, &c.

It very frequently occurs in persons under the adult period of life ; is most common in children, and rarely seen in persons above the age of thirty years ; it attacks often those of delicate habit and weak constitutional power : I do not recollect to have seen a single case, of pure corneitis, in a subject possessing a proper degree of general power.

This, as other ophthalmic diseases, is modified by important functional derangement. That which most frequently influences this particular affection, is deficient cutaneous action ; and I have also sometimes found, in young and delicate females, that error in the periodical uterine secretion, has had an important effect over the corneitis. It is also modified by the condition of general power.

The effect of the inflammatory action on the cornea, leads first, I believe, to an arrest or suspension of secretion of the interlaminar fluid, and subsequently, to the deposition of opake fibrin ;

and, from the acknowledged influence of mercury, in checking the deposit of fibrin, or arresting adhesive inflammation, it is the remedy most to be relied on ; but, as this disease most frequently occurs in young persons of scrofulous habit and feeble power, so active an agent, as mercury, must be carefully administered, and its effects closely watched ; otherwise it will prove prejudicial instead of beneficial. According, therefore, to the age and strength of the patient, is this powerful remedy to be given, in small or moderate doses. I begin usually, in children, with one grain of mercury with chalk, and generally combine with it two or three grains of the compound powder of antimony ; and this I deem essential, if the patient be restless and hot at night, which is usually the case. The frequency, in which the dose should be admitted, also depends upon the power of the patient. I have, in some few cases, been obliged to omit all mercurial treatment, for a few days together ; as during the occurrence of diarrhoea, or from the remedy occasioning unusual depression and irritability.

Besides the exhibition of the mercurial, in most instances, it is necessary to give some tonic remedy ; and the selection of this, must depend upon the condition of the principal secretions, or of the circulating fluid. Where the secretions of the digestive organs are regular, and the pa-

tient merely wants power, the preparations of bark, as quinine, or the solution of yellow bark, will be found of service; but if, at the same time, with the want of power, the patient is unusually pallid, and the extremities cold, some preparation of steel, will effect more good than the bark. In cases occurring with a marked scrofulous diathesis, I have prescribed small doses of iodine with hydriodate of potash, with excellent effect. I most frequently order these preparations in some light bitter infusion, as cusparia, cascarilla, gentian, &c.

In the treatment of this disease, the employment of the remedies pointed out, requires much care and attention; for, as soon as any remedy produces general disturbance, its efficacy as regards the local disease is lost, and not unfrequently it proves injurious. This will be more clearly understood, by the relation of two or three cases.

31. A boy of scrofulous habit, but stout made, Case. though short for his age, was brought to me at the Ophthalmic Hospital, suffering from a severe form of corneitis, attended with great intolerance of light. Both eyes were affected nearly to the same extent. There existed, in each, a considerable degree of conjunctival inflammation, with so much interstitial deposit between the laminæ of the cornea, that the color of the iris could not

be detected ; and, consequently, all sense of vision, beyond the mere perception of light, was lost. The cornea exhibited, at its circumference, the minute crescentic red plexus, which I have described, and this occupied about one third of the margin of the cornea ; and many of the vessels of the sclerotic could be seen, near the margin of the cornea, filled with red blood. The boy had been many weeks under treatment, and had been submitted to free mercurial action, and local counter-irritation of a violent kind ; for his gums were swollen and spongy, and he could only masticate soft food ; and he had issues in his temples ; yet in spite of such treatment, the local diseases advanced. I found further, that the secretion of the alimentary canal, had been much disturbed, by mercurial influence ; that his appetite was defective, and that he was low and spiritless.

I directed the issues to be removed, and discontinued the use of the mercurial. I gave him a mild saline aperient to cleanse the bowels, and prescribed, subsequently, small doses of calomel and rhubarb occasionally, a grain of sulphate of quinine thrice in each day, and a nutritious diet of milk, farinaceous matter, and animal food once in the day. Only tepid water was to be used to the eyes ; and small blisters were to be applied behind the ears, every six or seven days, so long as the intolerance of light continued of a severe

kind. He soon began to improve ; the intolerance of light lessened rapidly, and the pain which had been considerable, subsided. He recovered his spirits, as his appetite and general strength increased ; from day to day, the redness of the conjunctiva and the sclerotic diminished ; in fact, such change, as was desired, quickly commenced : but, as his health and strength improved, and as the influence of the mercurial (which had previously been excited in excess,) disappeared, the local disease became stationary, and I was obliged again to resort to the mercurial agent. This I did, however, with great caution, giving only one grain of the mercury with chalk, per diem. I found this in a few days to be sufficient, for the ocular disease began again to diminish, and the case proceeded to a favorable termination, without any important modification of the plan ; but his gums did not again become tender or spongy, and we had no evidence of the mercurial influence, except from the absorption of the interstitial deposit in the cornea, which had for some time remained without change, before the second time of the patient's taking this remedy. In this case, the large doses of mercury, combined with other general and local treatment, which tended to lessen the general power, had aggravated the corneitis ; whilst the same powerful remedy cau-

tiously administered, in conjunction with such means as promoted and maintained a good state of general power, acted most beneficially, and speedily removed the disease.

Case.

32. I lately saw a nobleman, who had been the subject of corneitis, in both eyes, for above five months. It occurred in the latter part of the winter, and whilst he considered his general health to be good ; but he had, for a week or two previously, experienced unpleasant rheumatic pains, about his shoulders and neck. The means, resorted to, at first, to relieve the ocular disease, were altogether of a depletory kind ; and, under such treatment, the disease advanced. Other advice was then called for, and he took colchicum and mercury, and used further means of depletion locally. He still got worse. Another opinion was then obtained, and mercury was prescribed in large and frequent doses, with a continuance of leeching and cupping locally, with a spare diet. The mercury produced diarrhoea, and great general depression and debility, so much so, that it could not be continued. The hydriodate of potash, with iodine, was also given, but it produced distress of stomach, and could not be gone on with. A more generous diet was then allowed ; leeches were occasionally applied to the eyelids ; and counter-irritation was promoted by daily friction on the temples.

His general health now improved, and the ocular affection became, in a degree, mitigated ; and, in this state, I was requested to see him. I found considerable intolerance of light ; numerous conjunctival and sclerotic vessels, filled with red-blood ; both corneæ nebulous, but not sufficiently so, to prevent my ascertaining that the irides were grey or blue. I could not detect vessels, filled with red blood, on the cornea. The patient could discern the outline of a person, but could not distinguish features. His general aspect was pallid, with a look of depression. The hands were rather cold, and the pulse quick but feeble, and the skin felt somewhat harsh and dry. I recommended a continuance of generous diet, and of such stimulus as was found agreeable and beneficial ; that he should take one grain of mercury with chalk, and two of compound powder of antimony, night and morning, (there was no evidence of mercurial action at this time,) with some cusparia and ammonia, twice a day ; that he should be immersed in a warm bath every other day, for ten minutes at a time, at a temperature not exceeding 98° ; that he should be allowed exercise in the open air daily, when the weather was dry, and the wind not from the east or the north. I further consented to the continuance of slight counter-irritation,

on the temples, by friction; and the application of a leech or two, to the lower eyelid, in case of a recurrence of pain; and a drop of a solution of belladonna, (which had been used for some days previously,) was also to be applied as before. After eight days I saw the patient again, and found very considerable improvement. The intolerance of light was greatly diminished, and on my approaching him, he said he could distinguish my features, so as to be able to recognise me, in future, with facility. The red conjunctival vessels in the left eye had nearly disappeared; and the cornea, to rather more than half the upper part, had regained its transparency. Nebulae still existed at the lower part, so that he could not distinguish objects below the eye. The right eye still exhibited some degree of conjunctivitis and scleritis, and the entire cornea remained hazy, but not so densely so, as on my previous visit. He had not pursued the plan of treatment recommended to its full extent, inasmuch as he had not taken more than two or three doses of the cusparia and ammonia; and, after two or three days from my first visit, he had omitted one dose of the mercurial in the day, which he had been desired to do, if he had any symptoms of disturbance of stomach or bowels; and this he had warning of; but in diet, exer-

cise, and use of the bath, he had been most regular ; and he had applied two leeches, on two occasions, to the lower lid of the right eye. A continuation of the same plan was urged, and I saw him again, after the interval of a week. His progress, during the interval, had been most satisfactory ; a further improvement having taken place, both as regarded the local disease and the general health. He had, however, taken a few doses of the hydriodate of potash, by the advice of his surgeon, and this had created a slight degree of gastric disturbance. It was, therefore, agreed that it should be omitted, whilst, in every other respect, the treatment was to be continued as before. After a week's interval, again I found still further progress to recovery, the left cornea being nearly clear, and the right presenting only slight nebula at its lower and outer part ; but the vessels of the conjunctiva and sclerotic still exhibited, in a trifling degree, unnatural distension by red blood. The progress had been so steady and satisfactory, that we considered our patient might safely quit London, which he did a few days afterwards ; I saw him just before he left town, and found little more than slight nebula of the right cornea remaining.

This affords another example of the injurious effects of depletory treatment, and of the use of mercury in excess in these cases, and offers an

excellent example of the influence of the latter remedy, in minute doses, when a proper degree of general power exists.

Case.

33. A boy, about ten years of age, of slender figure, delicate aspect, and scrofulous diathesis, was brought to the Ophthalmic Hospital, having suffered from corneitis for several years, which had destroyed all but the perception of light. He was pallid, the extremities were cold, and his pulse small and feeble. The secretions were in good order, and his appetite sufficient. There was very slight intolerance of light; some few large and tortuous vessels of the conjunctiva were distended with red blood, and minute ramifications from these, were continued in the corneal portion of the membrane, and into the substance of the corneæ. Both corneæ were so densely opake, as to preclude all view of the irides or pupils. A few vessels in the sclerotic coat, of each eye, were filled with red blood.

In consequence of his ex-sanguined appearance, I prescribed small doses of sulphate of iron, as a tonic, and grain doses of the mercury with chalk, night and morning. I directed that he should have a good, nutritious, but plain diet, without vegetable acids; that he should take an occasional aperient of rhubarb and jalap; that he should cleanse the eyes, three or four times a day, with tepid water, and that when he suffered from

intolerance of light, (which he did occasionally, although he could only discern light,) small blisters should be applied to the temples, or behind the ears ; not, however, to be kept open. Marked improvement took place, under this plan. The circulation became fuller and firmer, the surface more florid, and his general strength and spirits increased. The vessels, which had been filled with red blood, in the cornea and conjunctiva, gradually lessened, and became diminished in number. Treatment on this principle, was continued for several months, during which period, an occasional change was made in the tonic remedy, as he occasionally took the sulphate of quinine, or the solution of yellow bark ; change, in this respect being made, whenever the effects of one form of tonic appeared to cease, another being then substituted. As the health and strength increased, so, by degrees, the local disease diminished ; and, after about ten months, he could distinguish persons and large objects ; and had sufficient vision, to guide himself about the house, and its immediate vicinity. I then missed him for several weeks, and was fearful that he had been attacked by some serious illness ; but he was again brought to me, and I was much annoyed, and somewhat surprised, to find a condition of local disease more severe, than that which I had found when I first saw him. This



change, however, was connected with a far different state of general circumstances; for he was flushed, heated, and with a quickish, sharp, though compressible pulse; and he complained of head-ache and restlessness. The history of the interval, soon explained to me the cause of these alterations; for I found that he had still been regular in his attendance at the institution, but had fallen into the hands of one of the other medical officers, who had augmented very greatly the dose of the tonic medicine, and had omitted the small doses of the mercurial; but, in other respects, had continued the treatment which I had recommended. The consequence had been, a sudden increase of the action of the heart and arteries, with an arrest or disturbance of the functions of the alimentary canal and skin. The patient had therefore become feverish and excited, and the local disease had taken on a more acute character, and fibrin had been again thrown out, between the laminæ of the corneæ. I was compelled immediately, to act rather freely upon the important secretions, and to lessen the local action, by the application of a few leeches to the surfaces of the palpebræ; but, in a short time, was enabled to resume the original plan of treatment, under which he has since, gradually, progressed towards recovery. He can now see to read a large sized print, and to guide

himself any where with facility. He has become comparatively robust, and all that remains of the local disease is a nebulous state of the corneæ, partial in each eye, but greatest in the right ; and a portion of the latter is still so dense, that I despair of its eventual dispersion, believing the new deposit to be so well organized as to resist the action of the absorbents ; but I am satisfied, that much more will be effected by a continuance of the same treatment, and that he will recover a good, or nearly perfect state of vision.

This case has been to me one of great interest, and shews that error, in the administration of tonic or repleting remedies, may prove equally injurious to the mal-employment of mercury, or depressing remedies.

In the treatment of this disease, I find it necessary, carefully, to watch the effects of the remedial agents, and to modify their use, increasing or diminishing the doses, in quantity and frequency, according to the condition of the circulation, and the state of the most important functions.

The simple corneitis often occurs in young and delicate females about the age of puberty, and is modified, as I have before observed, by a want of proper uterine action. The following case affords a good illustration of this point.

34. A girl, about sixteen or seventeen years case.

of age, of short stature and feeble power, with a tendency to serofula, was sent up to me from the country, by a gentleman who had formerly been a pupil at the Ophthalmic Hospital ; but prior to the period in which this and other diseases, affecting the deeper textures of the eye, were fully understood. He had, however, treated this patient by small doses of mercurial, and attention to the functions of the digestive organs ; but had been too sparing in the allowance of nutritious diet, probably from the apparent severity of the local disease ; besides which, he had overlooked the condition of uterine action, which was exceedingly faulty. When she was brought to me, she was pallid, and the hands were cold ; the circulation was slow and rather feeble. She complained of pain about the forehead, and in the eyes. There was much intolerance of light, and a profuse discharge of tears, on exposure of the organ of vision. She experienced frequent sensation, as if grit were lodged in the eyes, and said, that the secretion felt hot or scalding. The conjunctiva and sclerotic, in both eyes, exhibited numerous vessels filled with blood of a dull red color. Each cornea was so obscured by interstitial deposit, that the iris could not be seen ; and on the margin of each, occupying more than half the circumference, was the crescentic red appearance, which I have described as resulting

from minute conjunctival and corneal vessels, filled with florid blood. The nebula was most dense in the immediate vicinity of this vascular plexus. I directed that she should take small doses of mercury and antimony, night and morning; sulphate of iron, in small doses, three times a day, and an occasional aloetic purge; that the diet should be good and nutritious, without any acids, and without any stimulus of beer or wine, as she had not been accustomed to them. Small blisters were ordered behind the ears, every six or eight days; or, as soon as one was healed, a second to be applied; and so on, as long as she continued intolerant of light. We made but little impression on the disease, for more than three weeks, during which time I gradually augmented the quantity of steel medicine. At length, however, uterine action took place, though in a trifling degree, and a marked improvement occurred in the ocular affection; but she again remained nearly stationary, until the next sexual period, when the catamenia became more perfectly established; at which time a further material improvement in the corneitis took place, and we experienced little subsequent difficulty in completing the cure. The corneæ became perfectly transparent again; but their convexities were so much increased, as to compel

her to use concave glasses, for minute visual purposes.

In this case it was evident, that the ocular complaint was influenced and suspended, in consequence of error in the catamenia; so that the ordinary plan of treatment, would have failed in effecting a cure, although it might have mitigated the corneitis, had not remedies been applied, at the same time, to promote proper uterine function.

Consequences. Permanent opacity of the cornea sometimes results from this form of corneitis, the fibrin which is deposited between the laminæ of the cornea, becoming so far organized as to resist the action of the absorbents. A general consequence of continued disease of this kind, is an increase in the convexity of the entire structure, by which the focus of the organ becomes altered, and the patient short sighted. The inflammation sometimes passes into a suppurative stage.

Combination. We rarely find this form of disease in combination with any other, except such affections of the conjunctiva and sclerotic, as I have described, which are consequent upon the corneitis.

INFLAMMATION OF THE CORNEA, TERMINATING IN SUPPURATION.

ABSCESS of the cornea.

Synonyme.

The term *onyx* is also applied to this disease, by some authors, but *onyx* properly denotes effusion of pus into the anterior chamber ; which, gravitating to the lowest part of the cavity, presents an appearance resembling, somewhat, the white mark usually exhibited at the base of the thumb nail, and often in the other nails of the fingers. *Hypopion* is the proper term, for deposition of pus between the laminæ of the cornea. (*Vide St. Ives.*)

I shall describe two forms, acute and chronic.

OF ACUTE SUPPURATION OF THE CORNEA.

Symptoms.

ACUTE pain in the globe, extending to the forehead and temple ; more severe towards night, and increased on slight pressure, the eye being very tender ; a sense of fulness or tension of the globe, usually exists. There is most frequently intolerance of light ; the secretions are augmented, and flow over the cheek, creating a scalding feel, and the heat of the part appears much increased ; all useful vision is lost.

Appearances.

The eyelids are forcibly closed on exposure to light, if there be intolerance ; and when separated, a gush of fluid takes place, from the escape of the accumulated secretions.

On exposing the surface of the globe, numerous vessels of the conjunctiva and sclerotic may be seen injected with red blood ; those of the conjunctiva distinct, and somewhat tortuous ; those of the sclerotic, small and straight : the latter are most abundant, about the circumference of the cornea ; on which account, the red

color is deepest in that situation. On the margin of the cornea, there is usually a crescentic plexus of vessels, filled with red blood, and appearing as a spot of extravasated blood, on superficial inspection. The general brilliancy and transparency of the cornea is much diminished, and one portion (varying in extent, according to the severity of the case,) presents a dense opake aspect ; this spot is usually rounded or oval, the circumference is white, and the centre of a light yellow color, the edge being rather abrupt ; the white circumference is owing to a layer of fibrin, which bounds the suppuration, whilst the yellowish color, shews the extent of the deposition of pus. In the commencement of the disease, the spot is wholly white, when there is only fibrin thrown out, but this is quickly followed by suppuration.

This acute form most generally results from Causes. accident, as a scratch from a finger nail, or the point of a pen or pencil. I have known several very severe cases, among the laborers employed in collecting the harvest, in consequence of injury to the eye, from the beard of wheat or barley. It is, however, sometimes idiopathic, resulting from neglect, or mal-treatment of ordinary corneitis.

It is most frequent in persons of scrofulous Persons liable to. diathesis, and takes place generally in adults.

Treatment.

When arising from injury, in adult or strong persons, active measures are necessary, to prevent extensive mischief. First, general and local bleeding should be employed ; and some brisk aperient be given :—after which, emollient applications should be used, and such medicines exhibited, as will tend to keep up an action on the mucous and cutaneous surfaces ; the patient being kept at rest, and on a low diet. Repetition of the general or local blood-letting may be necessary, in the first few days of treatment, if the pulse rise, or the local congestion and pain increase.

After the abstraction of blood, counter-irritation by blisters, to the temples or neck, will aid in subduing the disease, if it has been of long duration.

When the abscess is extensive, and the pain severe, with a distressing sensation of tension, I consider it proper to puncture the cornea, more with a view to relieve the suffering, than to hasten the cure ; for the matter is rarely so fluid as to escape by a small aperture, but the larger part appears to be removed by absorbents. When idiopathic, or when occurring in young and feeble persons, depletion generally must be avoided, and reliance must be placed, principally, upon slight local bleeding, by leeches, or counter-irritation, by small blisters, often repeated ; attention to the

state of the secretions, and dietetic and medical treatment, to promote and maintain general power. If there be much circum-orbital pain, friction with blue ointment and opium, to the temple and forehead, will usually afford relief.

OF CHRONIC SUPPURATION OF THE CORNEA.

Symptoms.

THIS form is also marked by pain, but usually not severe, and without much augmentation at evening or night ; the globe is tender, and a sense of fulness exists. There is not much intolerance of light ; frequently, the patient bears exposure to it, without any suffering. The secretions are augmented, but there is not the sensation of scalding or increased heat.

Appearances.

Many of the vessels of the conjunctiva and sclerotic are found carrying red blood ; but they are not so numerous, and the color is not so bright, as that exhibited in the acute form. The cornea is dull, and its transparency is lessened generally, but one part is completely opaque ; the aspect of this spot is nearly uniform, being of a dull, yellowish color, without any decided white circumference ; it is, however, round or oval, and has an abrupt termination.

Causes.

I have seen this form, most frequently, in children who have suffered severely from febrile

disease, as measles, scarlatina, &c. ; and also in old persons after injury.

Those of scrofulous habit, and of weak constitutional power, either natural, or induced by general disease, or excesses.

The first object is to subdue the increased local action, which may be effected by the application of a few leeches, and, especially, by counter-irritation from blisters : emollients should be used to the eye.

In the next place, the constitutional power should be supported by a nutritious diet, and, if necessary, by stimuli; the more important secretions being, at the same time, carefully attended to.

Very commonly, either diarrhoea, or excessive perspirations, accompany this form of complaint, which will require judicious medical and dietetic treatment. If the general power is not restored and supported, the local disease is sure eventually to progress, whatever local measures may be resorted to ; the chief attention must, therefore, be directed to this point. It requires an experienced eye, sometimes, to detect the difference between these acute and chronic forms of disease, and, often, the preservation of vision depends on a correct diagnosis.

Frequently, in both forms of disease, in spite of careful treatment, the matter finds its way, by

ulceration, through the cornea, to the surface of the globe; in which case, but a small portion of the pus is discharged, especially if the disease be acute; for the morbid secretion is then so thick, that a large portion adheres to the surface of the abscess and ulcer. In neglected cases, the whole texture of the cornea is occasionally penetrated, and prolapsus of the iris ensues. When ulceration occurs, the patient never escapes, without a permanent opacity of some part of the cornea; and, often, the pupil is diminished, or destroyed, by the prolapsus of the iris.

OF INFLAMMATION OF THE CORNEA, WITH
VESICATION.

A PARTIAL separation of the conjunctival layer Definition. of the cornea, by effusion of serous fluid.

The symptoms occur in paroxysms, and there Symptoms. is an extremely irritable condition of the eye ; great intolerance of light, severe darting pains, a sensation, as if a sharp and hard foreign particle, were lodged beneath the palpebra ; increased heat and lachrymation, creating a sense of scalding. These attacks are gradual in their approach, being preceded by slight uneasiness ; but they subside suddenly, leaving only a dull aching pain, which is augmented towards evening.— There is not any useful vision, even between the paroxysms.

Spasmodic action of the orbicularis muscle, Appearances. from exposure to light, during the paroxysm, and a discharge of the superabundant fluids ; evidence of increased action, in the conjunctiva and sclerotic, many of their vessels being filled with red blood ; only few of the latter, but very

many of the former, being perceptible. A partial nebulous condition of the cornea exists, in the centre of which, a small vesicle distended with fluid, may be perceived, if the eye be examined during the paroxysm; otherwise, a thin portion of loose membrane, which is partly separated, much as the cuticle is, after the puncture of a cutaneous vesicle.

Persons
liable to.

I have only seen this disease in adults, and only in those who have, at the same time, been suffering from derangement of the general health; and, in most instances, when there has been a tendency to rheumatic affections.

Treatment.

I believe that this form of disease is alone to be relieved or cured, by general means, as I have known nearly all kinds of local remedies employed, without any beneficial result.

Case.

35. In the first well marked case of the kind which came under my care, I tried numerous local applications, but without producing any good; and I also pursued several plans of general treatment, for a long time, but could not effect any decided improvement. The patient was also the subject of extensive urethral disease, on which account, (after he had been for many weeks in attendance at the Ophthalmic Hospital,) I admitted him as an in-door patient, at St. Thomas's Hospital, where, in addition to the alterative medical treatment, I directed the

use of the warm bath every other day, for the relief of urethral affection ; he was taking, at the time, small doses of the bichloride of mercury with sarsaparilla, and had been doing so for several weeks previously, as it appeared to check the progress of the ophthalmic disease, although it had not produced any decided improvement in it. After he had taken the bath two or three times, a very marked alteration, for the better, took place in the eye ; and I was much gratified in a few weeks, to find that it was perfectly restored.

36. At the same time, I was attending a Case. gentleman, holding a situation in the India House, who had been for many months, suffering from a similar disease, in one of his eyes, and for which he had undergone a variety of local and general treatment, under different surgeons, or oculists : finding the advantage of a warm bath, with alternative treatment, in the former case, I immediately adopted the same plan, with this gentleman, and with equal success ; the eye soon became quiet, and all disease gradually disappeared, excepting a slight opacity, which resulted from the free application of caustic, during the previous management of his case, in other hands.

I have since seen several cases of this kind, all of which have done well, under treatment similar in principle ; one case in particular, further

proved the importance of the warm bath, as a remedial agent.

Case.

37. The wife of a medical gentleman in the city consulted me ; she was suffering from this form of inflammation of the cornea, in an aggravated degree ; it had continued several months, and had resisted all the ordinary local and general treatment. I prescribed for her the bichloride of mercury, in small doses, with sarsaparilla ; counter-irritation by small blisters ; a regular nutritious but moderate diet, allowing a little wine, as the general power was below par ; and further, I desired that she should have a warm bath, every other day, at the temperature of 98°, for ten minutes ; she adopted this plan, with the exception of the warm bath ; (which her husband considered to be unnecessary;) and for several weeks experienced some mitigation of symptoms ; but there was no appearance of the cessation of the disease.

Subsequently, she had an invitation to visit a friend, in a situation where she could have the advantage of a warm bath ; and she accepted the invitation, partly to avail herself of this additional remedy, which I considered so important in her case : it had the desired effect, and, after a few weeks, she returned home perfectly relieved from her painful and obstinate disease ; several years have since elapsed, and she has remained well.

Two other cases in elderly females, one above three years duration, and the other more than two, yielded, in a few weeks, to a similar plan of treatment, and have not relapsed.

OF INFLAMMATION OF THE CORNEA, WITH
DEPOSITION OF EARTHY MATTER.

ALTHOUGH I have not had opportunity, by chemical analysis, of ascertaining that the nature of the deposit, I am about to describe, is earthy ; yet I have ventured to term it so, as it possesses the general characters of an earthy substance.

I have never seen this kind of deposit, unless in connection with, or preceded by such symptoms, as indicate inflammatory action in the cornea simply, or of it, and some of the other tunics of the globe.

In most of the cases, there has been a dull aching pain in the globe, with tenderness augmented towards night, and an impaired state of vision. In some few instances, I have witnessed this formation, when there has been a chronic inflammation of the tunics generally, and when such disease has destroyed all useful vision.

Appearances.

I do not consider it necessary to repeat here, the signs of inflammation, but merely to describe

the appearances, presented on the cornea. Most frequently, it is partially dotted or speckled with small, irregular, dull, and defined opake spots, clustered together, and occupying various positions, in different cases ; being, sometimes, near the centre, and at others, towards the circumference, but not confined to any part of it. If viewed obliquely, these little patches appear slightly elevated, from the surface of the conjunctiva. If the inflammatory action is still proceeding, the cornea is nebulous, from slight interstitial deposit of fibrin, especially beneath the seat of the superficial disease. This nebula, however, soon subsides, after the inflammation is subdued, when the small opake spots on the surface, become more distinct and defined.

In some few instances, I have seen this deposit confined to one spot, of more considerable extent, offering a diameter, equal to an eighth of an inch. I have twice, in such cases, removed the substance with a needle, and much regret that I did not submit the portions to chemical analysis, to ascertain their nature ; but I did not, at that time, suspect that they might be other than earthy. I now, however, find, that in the opinions of several eminent ophthalmic surgeons, these deposits result from the continued use of the solutions of some of the metallic salts, especially the preparations of lead, which are decomposed,

by mixture with the secretions of the eye—an insoluble precipitate being formed ;—and that this, adhering to an ulcerated surface, creates the appearance I have described.

Since my attention has been directed to this point, (now several years,) the cases which have come under my observation, have been, in general, contradictory to such opinion. In several instances, I have seen this appearance, when the patient has not previously made use of any metallic preparation. In some, I have seen the deposit increase, when I have been confident that merely tepid water had been applied—and, further, I have known a second and third attack of disease, creating this deposit, without any of the solutions alluded to being employed.

Supposing such an appearance to result, from the continued use of a solution of the metallic salts, I consider that it would be a common occurrence at the Ophthalmic Hospital, as the acetate of lead, in solution, is the common lotion prescribed in cases of simple ophthalmia, with ulceration of the cornea ; and such cases are very numerous.

The cases, however, in which the cornea exhibits the appearance above described, are extremely rare ; and although I would not deny that opacity may occasionally result, from the adherence of an insoluble precipitate, on an ulce-

rated surface, yet I must confess, that I have never seen a satisfactory case of the kind.

The cause is, according to my belief, a slow ^{causes.} inflammatory action, and, probably, such as we find frequently causing deposit of earthy matter, in other textures of the body.

I have seen this disease in children, and in ^{Persons} _{liable to.} persons of middle age, but never in advanced age—principally in those of scrofulous habit, and, in most instances, also subject to rheumatism or gout.

The first object must be the removal of any ^{Treatment.} inflammatory action, if it exist; and this may be accomplished by the means recommended for the cure of corneitis; after which I have generally employed a weak solution of the acetic or hydro-chloric acid as a lotion, and, with the best effect, in promoting a gradual removal of the deposit. In a few cases, in which the affection of the cornea, has been combined with a chronic ophthalmitis, and the disease has been altogether of long standing, I have failed in effecting much relief; and I have known the functions of the organ entirely destroyed, by a slow disorganizing process, in spite of the most careful management.

OF ULCERS OF THE CORNEA.

ULCERS of the cornea are usually consequent on inflammation of the surrounding textures, more especially that affecting the conjunctiva;—there are, however, some circumstances connected more particularly with the appearances, which I think important, as enabling the surgeon to decide on the form and character, of the accompanying inflammation.

An ulcer of the cornea must be in one of the following states.

Healthy.

First, that which we may term healthy, when its surface and circumference exhibit a degree of haziness, or opacity, of a whitish or grey aspect, which is owing to the effusion of adhesive matter on the surface, and in the surrounding texture, which is essential to the healing of the part. *See plate 1, fig. 3.*

Inflammatory.

Second, a state in which too much action exists, and which may be recognized by the appearance of small vessels carrying red blood, ra-

mifying into the newly effused matter in the ulcer, which, as described in the first case, renders its surface, and the part immediately around it, nebulous or opake. *See plate 1, fig. 4.*

The third state, is that in which there is an ^{Indolent.} evident want of action,—when the ulcer appears clear and transparent; merely a small dent presenting itself on a close inspection of the surface, as if a small portion had been cleanly excised by some sharp instrument; there is no apparent deposition of lymph, or any appearance of increased action, as in the two former instances.

The first state, combined with inflammation, indicates that the inflammatory process is not of a very severe kind.

The second shows, that the local action is beyond that which is necessary, and, therefore, that it should be checked.

In the third form, there is a want of action, which shows the surrounding inflammation to be of a chronic or indolent kind, requiring the use of local, as well as general stimulants.

I have made the above observations respecting ^{Treatment.} the conditions of ulcers, principally with a view to enable the surgeon to form an immediate opinion, respecting the state of the ophthalmia, and, consequently, of the correct plan of treatment. Thus, when the ulcer presents the appearance first described—as the healthy action is proceed-

ing, it is merely required to watch the case, and, by timely application, to prevent any increase of action. In the second instance, the necessity for depletory measures is clearly indicated, and these must be steadily pursued until the visible vascularity of the ulcer is subdued.

In both states, the most simple and inoffensive local application must be employed—as tepid water, or the decoction of poppy-heads, or chamomile flowers.

The third form is more difficult to manage, and alone requires further remarks respecting treatment. It must first be ascertained, whether there be, simply, a deficiency of local action, or both of local and general action.

If there are no symptoms indicating general debility, the treatment is extremely simple; as the application of mild stimuli, to the surface of the ulcer, will soon induce the desired action, and the reparative process will be established. When, however, there is marked evidence of feeble constitutional power, both general and local remedies must be resorted to; the local means are required, to arrest the ulceration, and the constitutional treatment, to aid and support the influence of the topical applications. In either case, the stimuli employed must be at first weak, only of sufficient strength to create a slight smarting when applied; they are best used

in the form of solution, so that they can be thrown immediately on the affected part, by means of a syringe. The application should be repeated, every five or six hours, until a slight haziness around the ulcer, indicates the commencement of the proper action—and, at the same time, the strength of the solution should be increased gradually, or a stronger stimulus employed, each time, until the desired effect is produced. The best stimuli, are the salts of zinc, and the nitrate of silver.

I much prefer this plan to the use of the nitrate of silver in substance, immediately to the surface of the ulcer; there is less difficulty in the application, and, if properly pursued, there is little danger from extension of the disease; whereas the nitrate of silver itself, even if properly applied, (which is, however, a matter of much difficulty,) usually creates a slight slough, and, therefore, extends the mischief on the cornea.

For restoring general power, an improved form of diet, and the use of some of the preparations of bark, with or without the addition of mineral acid, will be found beneficial—the form of medicinal stimulus must, however, depend on the condition of the more important functions.

During the exhibition of either local or general stimuli, the patient must be carefully watched,

to prevent any excess of local action,—which would be indicated, locally, by the free deposit of opake fibrin, and the appearance of vessels carrying red blood to the new matter.

I have related two cases, in illustration of the modification of ophthalmia, by a feeble state of the general power, which also afford most satisfactory evidence, that the condition of an ulcer of the cornea, is a very good index to the condition of the existing ophthalmia. *See cases 6 and 7.*

Deceptive cases.

It often happens that ulceration of the cornea takes place in the chronic stages of purulent or strumous ophthalmia, when a nebulous and vascular condition of the cornea exists, as consequent upon the granular state of the eyelid, or continued scrofulous inflammation.

In such cases the ulcers are generally indolent, being transparent, although many vessels carrying red blood are apparent in the conjunctiva corneæ; so that upon superficial inspection, the presence of these red vessels might be taken as evidence of too much local action, and the ulcers be considered as inflammatory: but if a careful examination be made, the red vessels cannot be traced to the ulcers; whereas, in the condition which I have termed inflammatory, the red vessels pass into the ulcer, or the opake deposit on its surface.

In these cases, then, the transparent state of

the ulcers, and the mode of the distribution of the vessels carrying red blood, sufficiently mark the difference, between them and the inflammatory ulcers, to prevent mistake when proper care is taken.

If an ulcer penetrate the substance of the conjunctiva and cornea, leaving the membrane of the aqueous humor entire, the latter sometimes becomes protruded, through the opening in the cornea, by the pressure of the aqueous fluid, and it forms a small bladder-like tumor ; it is best to touch such projection, with nitrate of silver, very lightly, and excite adhesive deposit ; otherwise, the protruded membrane may burst, and give rise to that I am about to describe.

An ulcer of the cornea sometimes penetrates through the whole texture, opening the anterior chamber, and allowing the escape of the aqueous humor ; after which, the iris falls in contact with the posterior surface of the cornea, and a portion protrudes through the ulcerated opening, constituting what is called *prolapsus iridis*, (*myocephalon*, see plate 3, fig. 5,)—the extent of the prolapsus being proportioned, generally, to the size of the aperture.

Unless the opening be very small, there is but little chance of restoring the iris to its proper situation. Nothing can be effected by violence, and it is perfectly useless to attempt the relief of

the protrusion, by forcing it inwards by means of a probe, &c.; for, immediately the pressure is discontinued, a portion of iris again escapes into the opening. The mode which I have seen successful, has been the employment of belladonna, which, acting upon the iris, causes it in some few instances to recede; if this prove unsuccessful, it will be better for the surgeon to excite, as soon as possible, an adhesive process in the edge of the ulcer, so that the protruded iris may become glued to it, and a further escape of this important texture prevented. *The commencement of the adhesive process is indicated, as I have before described, by a whitish nebulous state of the ulcer, and the surrounding edge; if this does not take place, it should be excited, and the means I would recommend for this purpose, consist in the use of the nitrate of silver in solution, in the proportion of one to two or more grains to the ounce, according to the effect produced, beginning with the weaker form, and, gradually increasing the strength of the solution, until the desired effect is evinced, by the aspect of the ulcer; and, until this occurs, the solution may be employed three or four times, in a day, being injected on the diseased surface, by means of a fine syringe. I do not like the plan of applying the nitrate of silver, in substance, under such circumstances; as it causes a slough of the

surface, and thereby widens the breach ; besides which, it is extremely difficult to make the application, without employing so much force, in separating the palpebræ and fixing the globe, as to create an increase of the protrusion ;—whereas, the solution creates a regular action, equally well, without causing any further loss of substance.

In addition to the forms of ulcer of the cornea *sloughing*, which I have enumerated, two others exist, to which the term sloughing may be applied ; the one is dependent on an excess of surrounding action, producing an impediment to the circulation ; when a portion of the cornea, losing its vitality, assumes a dense dull opake appearance, and becomes separated, by a process of ulceration, which I have described when speaking of purulent ophthalmia. But little mistake can be made in the treatment of such a case, as the surrounding acute inflammation is generally sufficient, to indicate the proper plan to be pursued.

The other form of sloughing ulcer depends on the want of local action ; and the sloughs that are separated from the surface of the ulcer, are of a dirty ash color ; they are thrown off in successive thin layers. In this case there is but little, if any, evidence of increased action ; and when not covered with slough, the ulcer is clear and transparent.

This state I have mentioned as having seen most frequently, after cases of purulent ophthalmia, when the acute form of the disease has been subdued, by such means, as have greatly reduced the powers of the patient; but it occasionally exists after mere simple ophthalmia, proceeding to ulceration of the cornea, when the patients are very feeble.

OPACITIES OF THE CORNEA.

ARE of three kinds.

First, and most commonly, the alteration results from destruction of the original texture, by ulceration or slough, and a deposit of opake matter, in place of the transparent, forming a cicatrix.

Secondly,—opake matter may be deposited in or upon the texture of the cornea, without any previous loss of the proper structure.

Thirdly,—opacity is immediately produced, by the contact of some escharotic substances, which do not destroy the vitality of the part, but appear to produce some chemical change.

OF OPACITY FROM THE HEALING OF AN
ULCER OR WOUND.

Synonyms. **CICATRIX, albugo, leucoma.**

Symptoms. A partial or complete obstruction to useful vision.

Appearances. The appearance of the cicatrix will vary, according to the extent of the previous loss of substance. If the ulcer has been superficial, the opacity may be as a very thin and semi-transparent film. If the slough or ulcer has penetrated deeply, the cicatrix will present a dense and pearly aspect. (*See plate 6, figs. 3, 4, and 5.*) If the whole texture of the cornea has been penetrated, and prolapsus of the iris has taken place, a small brown or black spot will occupy the centre of the dense opacity, indicating adhesion of the iris in the cicatrix, (*termed myocephalon.*)

Such opacities are usually much more dense at the centre than at the circumference: the latter is most frequently irregular, and the edges terminate rather abruptly, instead of being gra-

dually lost in the surrounding transparent substance. This is more especially to be observed, some short time after the healing process has been completed; for, during reparation, opake fibrin is not only deposited, so as to repair the previous loss, but it is also thrown out in the transparent texture just around, forming a semi-transparent halo to the cicatrix. Still, however, on close inspection, the opake matter deposited on the site of the ulcer, will exhibit a greater density, than that which has been effused in the neighbouring texture, enabling the surgeon to form an opinion, as to the degree of recovery likely to take place.

The reparation of any injury, dividing or causing loss of the substance of the cornea, as a wound, ulcer, slough, &c.

In some cases of wounds of the cornea, if the edges are nicely adjusted during the healing of the part, scarcely any opacity results. I have several times had much difficulty, in recognising the situation of the section, made for extraction of cataract, and, in some few instances, could not, on close inspection, ascertain its position.

I have also known one remarkable case, in which the destruction of a considerable portion of each cornea, was not followed by the formation of opake cicatrices.

38. A man, thirty-seven years of age, applied Case.

at the Ophthalmic Hospital, having acute purulent ophthalmia affecting the right eye, in which complete chemosis existed, with a haziness at the upper part of the cornea;—the left eye was slightly affected. Severe depletory measures were adopted; but, in forty-eight hours afterwards, sloughing had commenced in the right cornea, and the left eye had become chemosed, with haziness at the upper part of its cornea. I then admitted him into the house, and carefully watched the case, using further depletion, and such other means, as I deemed requisite. In a short time the inflammation was subdued, but not until a part of the left cornea, as well as a portion of the right, had lost its vitality. The separation of the sloughs, left deep ulcers of a crescentic figure, at the upper margins of the corneæ; that in the right communicated with the anterior chamber, allowing of the escape of the aqueous humor, and prolapsus of a very small portion of the iris; which was reduced, by the influence of the extract of belladonna applied to the eye-brow.

The reparative process was excited, by the use of local stimuli, and improved diet; but, instead of the usual deposit of opake matter, the cavities were gradually filled, with a perfectly transparent substance, resembling very much the original texture.

The man became a patient at the hospital, about two years after his recovery from the attack above mentioned ; at which time, some very slight irregularity of the surface, alone indicated the seat of the previous disease.

It is useless to attempt, either by medical or ^{Treatment.} surgical means, the removal of these dense opacities ; when the healing process is complete, the opacity generally diminishes in some degree ; as the opake matter deposited during this process, in the surrounding healthy texture, is gradually removed by the absorbents, without the aid of stimuli ; although the absorption may be accelerated by their application.

In children who have suffered from ophthalmia, with slight superficial ulceration of the conjunctiva covering the cornea, the opacity, consequent on the healing process, frequently disappears during the process of growth.

Weak solutions of nitrate of silver, or of bichloride of mercury, are the most efficacious applications, to promote action of the absorbents.

OF OPACITIES OF THE CORNEA FROM DEPOSITION OF NEW MATTER, WITHOUT ANY PREVIOUS LOSS OF SUBSTANCE.

SUCH deposition may be either interstitial in the textures of the cornea ; or it may take place on its surface.

OF OPACITY FROM INTERSTITIAL DEPOSITION.

Synonyme. **NEBULA.**

Symptom. An impaired state of vision.

Appearances. The opacity may occupy nearly the whole, or only a part, of the cornea ; it scarcely ever presents the density or pearly aspect, which the opacity from cicatrix does ; the edge is usually regular and rounded, and it is gradually shaded off in the surrounding transparent structure, instead of terminating abruptly. (*See plate 2, figs.*

2 and 3.) Sometimes numerous small specks are apparent of unequal density and size.

Inflammation of the cornea, either acute or Causes. chronic ; also, frequently, extension of disease to the cornea, in consequence of continued scrofulous ophthalmia, or from the irritation of granular lid.

Under careful management, the interstitial Treatment. deposit will be generally removed ; I have seen many cases in which the nebula has been so extensive, as to prevent my seeing the pupil ; and, even in some cases, obscuring the entire iris ; and yet the patients have recovered with perfectly transparent corneæ.

As soon as all symptoms of inflammatory action have subsided, the surgeon may begin with the application of stimuli ; first, very weak, but gradually increasing the strength, as the eye becomes accustomed to the use of it. I usually commence with a weak solution of the sulphate of zinc, half a grain or a grain to an ounce ; and, after this has been used for a few days, (if the patient does not suffer from return of inflammation,) I then apply the solution of the nitrate of silver.

In children who have suffered much from previous strumous ophthalmia, stimuli must be employed very cautiously ; as I have known repeated relapse from their application. They

should be at first applied tepid. If the absorbent process appears active in removing the interstitial deposit, I frequently employ merely tepid water, in such cases; only resorting to the stimuli, when this process is sluggish or stationary.

There is an objection to the use of the nitrate of silver in solution, however of rare occurrence; it is a discoloration of the conjunctiva, which is indelible; it always commences at the lower part, where the membrane is reflected from the lid to the globe, and from this part it gradually extends on the ocular and palpebral surfaces,—the stain is of a dirty greenish slate color: I have seen it so extensive, as to occasion a remarkable but very unpleasant look.

When this remedy is used, therefore, the patient should be watched, and the membrane should be examined frequently; so that the application may be left off, as soon as any appearance of discoloration be perceived.

OF OPACITY FROM SUPERFICIAL DEPOSIT.

THE opake deposit which takes place on the conjunctival surface of the cornea, under a peculiar condition of inflammation—(but which is

considered by some ophthalmic surgeons to result from extraneous deposit, in consequence of a decomposition of lotion containing lead or nitrate of silver,) frequently remains after all morbid action has ceased.

Occasionally, only one or two spots exist ; but, Appearances. generally, numerous specks clustered together are to be perceived : they are irregular in shape, with well defined edges, and of dull aspect ; and, on close inspection in a favorable light, they appear as if a little raised from the conjunctival surface.

In many cases I have succeeded in effecting Treatment. their removal, by employing a weak solution of acetic acid as a lotion, or as a drop, to the eye ; but, in a few instances, all my efforts have proved unavailing to get rid of them, and this has been particularly the case, when the affection of the cornea has been combined with disease of the choroid, retina, &c., &c.

OF OPACITY FROM ESCHAROTICS.

THE opacity which results from the contact of some escharotic substances, which do not cause loss of vitality of the part, are supposed to result from some chemical change ; they resemble, very

much, the opacity from interstitial deposit, or the nebula ; but the mode of origin will easily enable the surgeon to form his opinion ; which is important as regards prognosis, for the interstitial deposit admits of removal ; but the opacity resulting from the influence of escharotic, according to my experience, is indelible.

OF STAPHYLOMA CORNEÆ.

AN opaque projection from the cornea usually Definition. rounded—from *staphyle*, a grape.

When two or more projections exist, the term *staphyloma racemosum* is applied.

When a large portion, or the whole of the Formation of. cornea, has been destroyed by slough or ulceration, and the crystalline and vitreous humors do not escape, the iris is generally protruded forwards, most frequently so, as to form a single projection ; but, occasionally so, as to present several rounded points—the general aspect of the part is, at first, nearly black ; but as the healing process goes on, fibrin becomes deposited on the exposed surface, and it gradually assumes a grey, and subsequently, a white appearance ; still, however, small black spots are often visible on the surface, after the staphyloma is perfectly formed.

According to the extent of the previous mis- Division. chief to the cornea, the staphyloma will be found

to occupy a part, or the whole, of the natural position—it may be termed, therefore, either partial, or complete.

The degree of projection is extremely various, being sometimes, but little more than that of the original structure, and sometimes, so extensive as to prevent the closure of the palpebræ. In some instances, it is of a uniform dense white; occasionally, the white is interrupted by small black or brown spots, and frequently a large vessel, or vessels, carrying red blood, are continued from the conjunctiva of the sclerotic, to the surface of the staphyloma. *See pl. 2, fig. 5.*

When the elevation of the staphyloma does not prevent the free motion of the palpebræ, but little local inconvenience results from it; but when it impedes the function of the eyelids, or prevents their adaptation, a constant state of irritation exists, affecting not only the staphylomatous eye, but, very frequently, the other suffers much from sympathy.

In all cases, there is a marked deformity; but, in those of great extent, the deformity is very disgusting.

Treatment.

When the destruction of the cornea has been so extensive, as to allow of the protrusion of the iris, &c., which I have described as giving rise to the staphyloma, much may be done on the part of the surgeon, to check the protrusion, although

he cannot, (unless by operation,) lessen that which exists. He should endeavour to excite the deposition of fibrin, by the use of local stimuli ; as the solutions of sulphate of zinc, or nitrate of silver ; and, further, by general treatment, if the patient be feeble ; for, as the healing process proceeds, the protruded point acquires more and more firmness, and gives way less to the pressure of the humors. Sometimes, in spite of the greatest care, the staphyloma will acquire a very large size.

For complete staphyloma, nothing further can be done, except by operation ; and such a measure is only absolutely required, when the disease is of such extent, as to impede the motions of the palpebræ, or prevent their approximation, and induces a constant state of irritation and inflammation, in which the sound eye participates from sympathy. The patient is, however, often desirous to undergo an operation, for the removal of the deformity alone, when he is not subject to any irritation.

The operation is extremely simple—a needle, armed with a ligature, or a curved cataract needle, should be passed through the staphyloma, to enable the surgeon to fix the globe, whilst he passes a pointed knife through the base of the projection, and separates it from the globe. The removal is usually followed by the escape of the

lens, and a large part of the vitreous humor; and the remaining tunics, in a degree, collapse.

The operation cannot be effected without incising the iris, which is always adherent to the staphylomatous mass; and its vascularity is, in some cases, so much increased, in consequence of the previous disease, that severe haemorrhage occasionally ensues: to such an extent have I known this occur, that I should be averse to perform the operation on a child of feeble power. The bleeding may be in a measure restrained by cold and pressure; but the patient cannot bear the latter to a sufficient degree, to check the haemorrhage altogether, and it sometimes continues for many hours.

In performing the operation, a sufficient opening should be made, to allow of the escape of the humors; otherwise, a fresh staphyloma is likely to form; but I should not advise the operator to interfere with the sclerotic tunic, as I have observed that severe suppurative inflammation has followed, in several cases in which that coat has been divided.

Should much inflammation arise after the operation, it must be met with the ordinary treatment; otherwise, simple emollient applications, rest, quiet, moderate diet, and an occasional aperient will be required.

The tunics gradually collapse; sometimes, so as

to expel the whole of the humors, and, at other times unite, so as to include some small part of the vitreous substance.

It is, in such cases, that the artificial eye can be best introduced and worn ; and when the remains of the globe are considerable, its motions affect the artificial structure, so that it follows the directions of the sound organ ; and, if the shape and color of the enamel eye be accurate, there is much difficulty in detecting it to be artificial.

Partial staphyloma often exists under circumstances, which render its reduction a matter of importance or anxiety ; as when there is sufficient of the healthy cornea left to enable the surgeon to form an artificial pupil beneath, or when the projection gives rise to much irritation or deformity. I have succeeded, in several instances, in effecting a reduction of partial staphyloma, by the careful application of nitrate of silver, or hydrate of potash, in substance : I have applied the escharotic first, at the base of the projection, taking care not to injure the remaining sound portion of the cornea—the effect has been the separation of a small slough ; but previous to such separation, a deposit of fibrin beneath, by which the deeper part has become more solid and strengthened ; after the part has recovered from one application, I have made a second close to, but not upon the same spot, and nearer to the

summit of the projection : again and again I have repeated this operation, acting upon the more prominent part, until a considerable or perfect reduction of the staphyloma has been accomplished ; and this has enabled me, in a few cases, to form an artificial pupil, subsequently, of much more utility to the patient. I prefer the hydrate of potash, unless the projection be very small ; for its use is followed by a much larger deposit of fibrin, than results from the nitrate of silver.

Before applying either, the portion to be used, should be reduced to a fine point ; and, when used, the surface should be cleansed from secretion, by a piece of lint ; the application should be lightly made ; and, immediately afterwards, a little sweet oil should be dropped into the eye, before the eyelids be allowed to close.

OF CONICAL CORNEA.

STAPHYLOMA pellucidum.

Synonyme.

The perception of distinct objects becomes Symptoms. confused, and, eventually, lost—at the same time small objects are with difficulty distinguished at a moderate distance; and, as the disease proceeds, a nearer and nearer approximation of them to the eye is necessary, to enable the patient to distinguish them; and, at last, they cannot be recognised at all.

It requires an attentive examination of the affected organ to recognise this disease, when it is but of small extent; for it is not perceived in viewing the eye directly, and it is only by inspecting it laterally, or obliquely, that the change in figure becomes evident. The alteration occurs only in the centre of the cornea, which is protruded forwards in such a manner, that when viewed in profile, instead of exhibiting a regular curve, as that of the segment of a circle, it has the figure of a cone, with the apex directed for-

wards, and the base corresponding to the junction of the cornea and sclerotic tunics. (*See plate 8, fig. 5.*) Sometimes, the point is slightly ulcerated or opake, but this is in consequence of the friction of the lid upon it, and it does not occur until the projection is very considerable.

It is this alteration in figure which gradually shortens the focus of the organ, and it enables us readily to understand how the vision becomes confused, and, in many cases, almost useless.

Causes.

Although I have seen very many of these cases, I have not been able, in any way, to explain them. My friend and colleague, Dr. Farre, mentioned to me a case, in which the disease appeared, after excessive indulgence in grief, with great lachrymation—and I have seen a similar case in a young lady—but I have also, and more frequently, witnessed the complaint in persons not at all disposed to be lachrymose.

Persons liable to.

All the cases, which I have seen, have been in young persons, males and females, but all above the age of puberty.

Treatment.

In the early stage of the alteration, I believe that it may be retarded, if not prevented from further increase, by the local use of stimuli; but, I have never known any diminution occur. I was led to adopt this treatment, first, in consequence of slight ulceration existing on the apex of the cone, in one eye of a patient; who had the

disease, in a minor degree, in the other eye : the solution of nitrate of silver which I had ordered was, by mistake, put to both eyes, and, for many months that I had opportunity of watching the case, the disease did not progress. I have since tried the same plan, with many others, and with considerable success.

In cases which have proceeded to such an extent, as to destroy all useful vision for minute purposes, I have repeatedly tried various concave glasses, but without affording any relief.

It was thought, that the removal of the crystalline lens, by getting rid of that convex and highly refractive body, would afford better vision, in such cases ; but the practice has not, in the least degree, supported the theory ; for it does no good.

Within the last six years, I have succeeded in relieving such cases, to a considerable extent, by a plan so simple that I am surprised that it had not been previously tried. It consists in altering the position of the pupil, and removing it from beneath the centre of the cornea, or that part which has its figure most changed, to near the margin, when the least change has occurred ; the error in refraction is consequently much lessened, and the vision becomes more perfect, and the focus lengthened.

I effect the change, in the position of the

pupil, in the following manner. I make a puncture, with a broad needle, close to the junction of the cornea and sclerotic; but through the former, and at the part corresponding to the interval between the abductor and depressor muscles; that is, at the outer and lower part of the cornea, (the instrument should be just of sufficient size to effect an aperture merely large enough to admit the passage of a small blunt hook;) (*see plate 9;*) I then introduce a small blunt hook, by the aperture in the cornea, and catch the pupillary margin of the iris; and the margin thus caught, I carefully draw out of the aperture by the hook; and, subsequently, as much of the membrane as is requisite to cause the pupillary opening of the iris, to change its position, from the centre to the outer and lower part of the cornea. The portion of the iris, brought out by the hook, I then cut off by a fine pair of scissors, or leave it hanging from the wound, in which part of this membrane is held, and, subsequently, becomes fixed in the cicatrix; whilst the projecting part separates by ulceration or slough. I usually cut off the projecting piece of iris, close to the wound; otherwise, it is apt to create some degree of irritation, by the friction of the eyelid, but should it be left, and irritation arise, it is soon remedied, by touching the portion of iris with nitrate of silver. I have per-

formed this operation seven or eight times ; and, in each case, it has benefited the vision, and, in two cases, very considerably. The advantage gained is more than adequate to the risk incurred ; for, in no instance, has any evil followed, beyond the slight degree of inflammation, necessary to repair the mischief, occasioned by the operation.

ARCUS SENILIS.

Synonyme.

GERONTOXON.

In elderly persons, a narrow portion of the cornea, near to its circumference, often loses its transparency without any other apparent change. The alteration generally commences at the inferior part, or a little towards the nasal or temporal sides, and gradually extends. It may, therefore, be found to occupy a very small part of the circumference, or to form a complete circle.

When perfect, it rarely exceeds more than a line or two in width, and is usually rather broader at the inferior part ; a very narrow portion of the cornea retains its transparency between the arcus and the attachment of the sclerotic.

I cannot offer any explanation of this change ; but it is a matter of no great importance, as it does not interfere with vision ; nor does it offer any impediment to operation, in cases of cataract ; for I have repeatedly extracted when the arcus existed, and I have not observed any difference in the after progress of such case, from others in which the arcus has not been formed.

OF INJURIES TO THE CORNEA.

WOUNDS of the cornea are exceedingly common, from the contact of small hard extraneous bodies, such as particles of iron or stone, which frequently lodge in it, as I have mentioned in describing simple ophthalmia, which is the common product of such injuries. The more extensive wounds, by knife, scissors, awl, &c., also create ophthalmia, and rarely occasion much more serious mischief, unless the entire cornea be penetrated, and the aqueous humor evacuated, so as to allow of protrusion of part of the iris through the wound. Occasionally, however, very slight injury of the cornea gives rise to severe inflammatory action; at first, affecting the conjunctiva; but, now and then, extending to the cornea, and other textures.

Unless in very young subjects, the patient is always aware of the nature of the injury; and even in the child, it is usually known to those who have it under their care. The medical man,

therefore, has first, to determine the extent of injury ; and, secondly, to guard against its effects in producing undue inflammation.

Treatment.

If there be simple wound, penetrating the substance of the cornea, but not extending to the anterior chamber, the case should be treated as one of simple ophthalmia, and the patient should be kept quiet, in a moderate light, and directed not to use the eyes for any minute purposes. He should be abstemious in diet, and the secretions should be acted upon by mild saline medicine. The injured organ should be bathed, occasionally, with tepid water, or with a cold evaporating lotion, if more agreeable to the sensations of the party. For a few hours, rags, wetted with the evaporating lotion, may be laid over the palpebræ ; but I do not like the continuance of such a remedy for days together.

If acute pain occurs, and conjunctivitis appears beyond a very moderate degree, the local abstraction of blood, by leeches to the eyelids, will be proper ; or, in persons in full vigor, a moderate quantity of blood may be taken from the arm, by venesection. This plan of treatment must be continued, until the risk of acute action has passed, unless the patient shew much want of power. But, perhaps, the best guide to treatment is the condition of the injured part ; which must exhibit one of the three appearances,

which I have already described under the subject of Ulcers of the Cornea. First, that in which a healthy process is going on, and in which the surface and edges of the wound are rendered opaque, by a deposition of fibrin. Secondly, that in which the local action is too great, and which is denoted by the appearance of red vessels, in the newly deposited fibrin.—And thirdly, that which indicates a want of proper action, in which the surface and edges of the wound remain transparent, from the absence of the deposition of fibrin. So long as the first condition exists, the surgeon has little to do, beyond regulating the secretions and watching the organ; but, on the appearance of the second, he should call to his aid local or general bleeding, according to the power of the patient; and should use other general and local means to suppress the inordinate action. Should he, however, find that state, which indicates a want of general power, he should give a more generous diet, and should use some local stimulus, as a weak solution of nitrate of silver; and he may further, perhaps, require the influence of some medicinal tonic. *See Ulcers of Cornea.*

I have seen a few instances, in which the local action, excited by the injury, has been violent, and has proceeded rapidly to a partial obstruction of the cornea. The injured part has first rapidly

become opake, from effusion of fibrin, which has taken place, to such an extent, as to cause a tumefaction of the part, immediately around the wound. Severe conjunctivitis has, at the same time, occurred ; and numerous vessels, carrying red blood, could be traced to the injured spot. The tumefied part has then lost its brilliancy, and has become of a dense and dull white aspect, having, in fact, mortified. This usually happens very rapidly ; so that the mischief generally occurs, before surgical advice is sought for ; or sufficient attention is not given to the condition of the part, so as to lead the medical man to obviate the mischief before it is too late. Such a case would require very active treatment in the commencement, or as soon as tumefaction is discerned about the seat of injury. If this part become dull and opake, some loss of structure is sure to ensue, but still, active treatment is required to prevent the extension of mischief. The arrest of mortification is indicated by the dull opake spot being abruptly terminated, instead of being gradually continued with the surrounding nebula. The abrupt termination shews that the mortification is stopt, and marks a boundary between the dead and vital part ; and, as soon as this is distinct, active treatment must be abandoned, and the moderate plan pursued, until the dead portion has separated, which it usually does

in two or three days. If the mortification have extended through the entire cornea, and aqueous membrane, the separation of the slough opens the anterior chamber; so that the aqueous humor escapes, and the iris falls against the aperture, and frequently in part projects through it. The treatment of the prolapsed iris I shall presently consider; but must observe, further, in reference to the wound which remains after the separation of the slough, that it must be attentively examined and watched, as its appearance will always indicate the degree of local action—as I have described on the subject of ulcers of the cornea; and the further treatment should be guided by the principles which I have there explained. (*See Ulcers of the Cornea.*) Should the wound, in the first instance, penetrate the cornea, and open the anterior chamber, prolapse of the iris frequently results, and the case is more hazardous to the organ from the probability of more violent inflammation, and from the risk of the iris participating in the morbid action. Besides, whenever prolapse of the iris occurs, the pupil is always disfigured, usually lessened; and sometimes, when the prolapse is great, the pupillary aperture entirely disappears.

In treatment, it is first desirable to cause re-^{Treatment.} traction of the protruded iris, if possible; and if not, to secure it from further escape by the open-

ing ; though, at the same time, the ordinary means which I have mentioned, as likely to check inflammatory action, should not be omitted. The only plan which I have found of any avail, in causing retraction of the protruded iris, is the application of belladonna to the palpebræ. This, however, must be employed when the injury is recent, and before any adhesive deposit has taken place ; otherwise, it is of no service. It has only been in cases, in which the prolapse has been very small, that I have seen the belladonna succeed. If it fail to produce the desired effect after an hour's trial, the surgeon should directly resort to the use of such means as will effectually prevent any increase of protrusion of the iris. His object is then to promote deposit of adhesive matter on the surface and edges of the wound, by which the part of the iris which protrudes becomes glued to the opening of the cornea, and secured from further escape. Fibrinous deposit usually takes place rapidly, from the restorative action which is spontaneously instituted, and it is evinced by the surface and edges of the wound becoming grey or opake. Should such appearance arise, the surgeon need only use such means as may prevent an excess of action on the one hand ; and on the other, he must support the general power, that the necessary degree of inflammation may not fail. The indi-

cations of inordinate or feeble action are the same as those which occur with ulcers, or the more simple wounds of the cornea; which I have previously described together with the requisite treatment, and which is equally applicable in this instance. The adhesion of the iris to the wound being secured, by adhesive deposit, the surgeon may, with little risk, proceed to destroy such part as projects beyond the ordinary level of the cornea, if it occasion much irritation; and this should be effected by a fine pencil of nitrate of silver, which should be applied on the projecting iris, without contact with the other part of the organ. The painful effects of this application are much prevented by placing upon the part a drop of milk or oil, as soon as the caustic has been applied.

The excess of action, which I have mentioned as sometimes occurring after the more simple injury, and leading to mortification of part of the cornea, is perhaps more frequent after the severe injury. When it occurs, it must be treated on the same principle as previously described.

Extension of morbid action of the deeper seated textures, is generally propagated through the iris; though occasionally, diseased action seems to arise, simultaneously, in the most important and deep tunics, soon after the injury has been inflicted. This I shall hereafter explain more at length.

Inflammation, attacking the iris, is a common consequence of the injury last mentioned, and is detected readily, by observing the aspect of that part of the iris, not connected with the wound. It first loses its brilliancy, and soon afterwards becomes discolored. It is easily checked in the commencement by timely use of a small quantity of mercury ; but the use of this remedy must be very guarded, as its influence, when severe or continued, will check the healing process in the wound, by stopping the deposit of fibrin ; but in moderation, or in such quantity as is requisite to arrest a slight degree of iritis, it will not interfere with the reparative process, provided the general power of the patient be good. When there is any appearance of iritic inflammation, some belladonna should be applied daily to the eyebrow. *See Iritis.*

Consequences.

An unavoidable consequence of injury to the texture of the cornea, is permanent opacity ; though it may sometimes be of very trifling extent. Further, should the iris prolapse, and be caught in the wound, so as to become adherent in the cicatrix, the pupil will be disfigured, lessened, and sometimes destroyed. When inflammation is excited in the deeper and more important textures of the eye, organic amaurosis may ensue.

A N A T O M Y
OF THE
SCLEROTIC COAT.

SCLEROTICA—cornea opaca ; named from its *synonymes*. firmness—*scleros*, hard.

The sclerotic forms about four-fifths of the exterior proper tunic of the globe ; being deficient at the anterior part, which is occupied by the transparent cornea : a small cribiform aperture also exists, at its posterior and inner part, through which the optic nerve passes.

It is in appearance white, shining, and fibrous and is composed of fibres, placed in all directions, interlacing with, and crossing each other, so as to make a very dense and firm structure ; it is thickest at the posterior part, near the entrance of the optic nerve, where it is firmly connected or continued with the envelope it derives from the dura mater ; as it proceeds forward, it becomes gradually thinner, until within a short distance

of its anterior termination, at which part, it again increases a little, to unite with the cornea.

The connections of the sclerotic are—

Externally, or by its convex surface, to the expanded tendons of the recti muscles anteriorly ; whilst posteriorly, it is perforated by numerous blood vessels and nerves, and has the tendons of the two oblique muscles fixed to it ; it is otherwise covered by cellular tissue, and fatty matter.—

Internally, or by its concave surface, it is connected loosely, by cellular membrane, to the choroid coat, as well as by numerous blood vessels : the surface is usually tinged, after death, of a dark brownish color, by the pigment which exudes from the choroid.

The edge of the anterior aperture is oblique, the inner portion terminating sooner than the external, so as to offer a surface of much greater extent, than could be afforded by an equal or level termination of the tunic ; to this oblique edge the transparent cornea is fitted, and intimately united. The degree, in which the external part of the sclerotic extends, beyond the internal, varies exceedingly ; sometimes being great, sometimes very little, so that the degree, in which the outer part of the sclerotic, overlaps the circumference of the cornea, is not at all regular ; it also often happens, that the anterior

termination of the sclerotic is not uniform, but that the external part is prolonged more in some parts than in others : thus, it sometimes overlaps the margin of the cornea more at the temporal and nasal sides, than it does above and below ; and, occasionally, more above and below, than at the sides.

The circumference of the posterior opening, is firmly joined to, or continued with the sheath, which the dura mater furnishes to the optic nerve. The space it circumscribes is rather a number of small openings than a perfect one, as portions of the fibrous structure pass from one part of the edge, to another, making numerous divisions.

The organization of the sclerotic coat is but indifferent ; it possesses few arteries and veins, which carry the serous or colorless part of the blood, and are derived from the ciliary vessels. Neither nerves nor absorbents, have been distinctly traced as entering the structure ; but we infer, from its morbid changes, that it possesses both : the minute vessels of the sclerotic anastomose freely, near the margin of the cornea, with the vessels of the iris, choroid, and ciliary processes, through the ciliary ligament ; and, slightly, with the vessels of the aqueous membrane and the cornea. The part which immediately overlaps the cornea, receives a separate and independent

supply of blood vessels from its conjunctival covering.

The sclerotic, in addition to its firmness, possesses flexibility and elasticity, with a degree of toughness, which adapts it most perfectly to the purposes for which it is designed—viz., to afford support and protection to the deeper tunics and humors.

It cannot be separated into two layers, in the adult eye; but, a partial separation may be sometimes made, in the foetal eye.

MORBID CONDITIONS
OF THE
SCLEROTIC.

THE sclerotic is liable to inflammation.

It also gives way to pressure from within ; sometimes partially, forming *staphyloma scleroticæ* ; or, generally, as in *hydrophtalmia*.

It is frequently the subject of wound.

OF INFLAMMATION OF THE SCLEROTIC.

Synonyms. **SCLEROTITIS**—rheumatic ophthalmia.

Symptoms. Pure inflammation of the sclerotic tunic is attended with a dull aching pain, which becomes more severe towards evening or morning; with a sense of fulness of the globe, and a degree of tenderness on pressure, as if the organ had been bruised; and such tenderness is much increased during the accession of pain at night; which is not confined to the globe alone, but extends usually to the temple, forehead, or cheek. Sometimes there is intolerance of light, but this is far from being a constant symptom,—when there is intolerance, there is also profuse lachrymal secretion; but, more frequently, the conjunctival surface is deficient in secretion, and the motion of the lids produces uneasiness.

Appearances. If there be intolerance of light, the pupil is generally contracted, more than is natural.

The sclerotic exhibits numerous minute vessels, filled with red blood, which are most numerous near to the cornea, but not forming a regular

zone, as in iritis, being more abundant in one part than another ; (*see plate 3, fig. 4 ;*) the color is usually a dull red, like that of brick-dust ; now and then, I have observed it to be rather of a purple hue. In mild cases, the redness is often confined to a small space, irregular in figure, perhaps not exceeding an inch in circumference ; but, sometimes, the greater portion of the visible part of the sclerotic exhibits vessels filled with red blood—usually, some slight degree of conjunctivitis is present ; and, in long standing cases, the iris becomes affected.

I believe that this affection is usually connected with some general rheumatic tendency ; as we most commonly find it to be immediately preceded by, or accompanied with, evidence of such disease, in other parts of the body. The exciting cause is usually cold and damp.

It generally occurs in adults. I have very rarely known it to exist in persons under the age of puberty.

This disease seldom, if ever, yields to local remedies alone ; the application of blisters affords some relief ; and, when the nocturnal pain is severe, it may be frequently much mitigated, by rubbing small quantities of mercurial ointment and opium combined, upon the temples and forehead.

If the patient be robust, and the disease acute,

abstraction of blood, and active purging should be first employed ; and, after this, if the tongue be clean, colchicum may be given ; I have frequently known this remedy act most rapidly and beneficially, in removing the disease ; about half a drachm of the wine of the seeds, should be prescribed with some alkali, every six or eight hours ; if, however, there is not a marked improvement in the local disease, after the patient has taken three or four doses of this remedy, there is seldom any advantage to be obtained, by a continuation of it—at the time it is administered, the patient should be kept upon a moderate diet ; principally, of milk and farinaceous food, and he should especially avoid all fermented drinks.

When this plan fails, and there is still much general vascular excitement, it is best to continue the low diet, and free purging, and to give full doses of Dover's powder at night, aiding, if possible, its action by the warm bath.

In those cases in which the constitutional powers are naturally feeble, or have been reduced by medical discipline, a generous diet should be allowed ; still, however, without acids, or fermented liquors ; the bowels should be kept regular, and mild tonic medicines resorted to. I have found the most decided and rapid benefit, from the use of small doses of bark and dried car-

bonate of soda, (five grains of each,) given about every four or six hours. This remedy was mentioned to me, some years ago, by Mr. Wardrop, and it is a very valuable one, inasmuch as I repeatedly find it successful, after the continued, but useless, trial of other means.

It appears necessary to employ the small doses, to produce the beneficial effect ; for, in several cases, I have known scruple or half drachm doses administered, without benefit ; and the same patients recover quickly, by resorting to the smaller quantities.

39. One of my colleagues had suffered from a Case. slight attack of scleritis, for several weeks, and the disease had baffled the ordinary local and general remedies ; tonics had been used freely, and, among them, large doses of bark and soda : the small doses, tried at my suggestion, soon relieved the eye from the diseased action.

I have also employed quinine, sarsaparilla, cascara with and without soda, and ammonia, in various ways, and frequently with advantage : in fact, I frequently find that a change in the form of the tonic remedy, is highly beneficial, in cases of long standing ; and it is not of much advantage to persevere in the use of any one, which does not create a sensible improvement.

Such local applications as are employed, should, in my opinion, be used warm ; I much

prefer the application of dry warmth by means of small muslin, or thin flannel bags, filled loosely with chamomile flowers, and heated in a hot plate or a warming pan ; narcotic fomentations, or steam carried to the surface of the palpebræ, frequently affords relief ; but, generally moisture is objectionable, for, although it produces relief at the time of its being applied, I have usually observed that more suffering has subsequently ensued, and this has been especially the case, when the palpebræ have been kept moistened for several hours together.

Consequences. The simple affection of the sclerotic coat, as above described, if neglected, soon extends to neighbouring textures, especially to the iris, and aqueous membrane ; and sometimes to the choroid—and I believe, that the cases described as rheumatic and arthritic iritis, usually commence in the texture of the sclerotic. *See Sclero-iritis.*

Combinations. Scleritis in a degree is usually found in severe cases of iritis, choroiditis, aquo-capsulitis, and corneitis.

A N A T O M Y
OF THE
A Q U E O U S M E M B R A N E.

SO NAMED, as containing and secreting the aqueous fluid.

It is an exceedingly thin and delicate membrane, so much so, that its demonstration by anatomical means is very difficult; but its extent can be fairly proved, by physiological and pathological facts.

It lines the anterior and posterior chambers of the eye, and is connected to the posterior concave surface of the cornea; thence it passes on the anterior of the iris, and, through the pupillary aperture, to the posterior part of the iris, supporting the uvea: upon the posterior part of the iris it is continued over the apices of the ciliary processes, and from these to the anterior capsule of the crystalline lens: thus it altogether

forms a shut sac or bag, (as other serous membranes,) which has two compartments, communicating by a narrow opening ; one large compartment exists anteriorly between the cornea and iris, and lines the anterior chamber ; and a second smaller exists posteriorly, between the iris and anterior capsule of the lens, and lines the posterior chamber ; and the two spaces communicate by the opening of the pupil. Throughout the whole of its extent, the aqueous membrane is intimately connected to the surfaces with which it is in contact.

The structure of the membrane is supposed to be similar, but much more delicate than that of other serous membranes.

Its blood vessels are, I believe, principally derived from those of the iris, and have connection, or anastomose with those of the cornea, sclerotic, and iris.

It secretes the delicate fluid which it contains.

OF THE AQUEOUS FLUID.

THIS is a beautifully limpid fluid, filling the two chambers of the eye, and contained in the aqueous membrane, which secretes it.

The quantity varies, in different persons, from about four and a half grains, to six grains.

Its specific gravity is about 1.009: according to Berzelius it contains,

Water	-	-	-	-	98.10
A little albumen with hydro-					
chlorates and lactates	-				1.15
Soda and animal matter	-				0.75
					100.00

As filling the chambers of the eye it serves to keep the cornea tense and convex, and to preserve the proper relative positions of the cornea and lens. Its great tenuity permits free

motion of the iris in it, whilst its extreme clearness allows a ready passage to the rays of light.

Sir D. Brewster states its refractive power to be 1.3366'.

MORBID CONDITIONS
OF THE
AQUEOUS MEMBRANE.

THESE result from inflammatory action and consist of

Thickening and opacity, general or partial, and tubercular, or both.

Effusion of pus without ulceration.

Ulceration and secretion of pus from the ulcers.

Slight thickening, with augmentation of the natural secretion.

Each of these conditions requires separate consideration.

OF THE INFLAMMATION OF THE AQUEOUS
MEMBRANE, WITH DEPOSITION
OF FIBRIN.

Synonyme. **AQUO-CAPSULITIS.**

Symptoms. In most instances, the patient complains simply of a dulness or cloudiness of vision, which varies in extent, from that of a slight mist, to a dense cloud. Occasionally, the patient suffers from intolerance of light, and, now and then, this symptom is in excess. Sometimes a sense of fulness exists, but rarely does the patient suffer from severe pain.

Appearances. If there be intolerance of light, there is usually spasmodic action of the orbicularis muscles, when the patient is exposed to the light, for the purpose of examination ; and frequently, at this time, there is an inordinate secretion of lachrymal fluid. When the globe is brought under view, the cornea appears generally hazy, and such haze is more uniform than in corneitis, but it is interrupted by small white dots or spots.

Attentive examination of the organ, especially when the cornea is examined by an oblique view, evinces that the morbid change is not in the substance of the cornea, or in its conjunctival covering, but subjacent to the former, in the membrane which lines its concavity or posterior surface. It is almost impossible, when viewing a plate of glass directly, to decide whether any flaw exists on the anterior or posterior surface, or in the substance of the glass ; but a careful lateral, or oblique inspection of the part soon determines the site of the defect ; so it is with the detection of the morbid changes of the cornea, or of its conjunctival or aquo-capsular surfaces. I have seen many cases, where a slight general haze existed, without any white spots ; but, most frequently, the latter are present. The general cloudiness results from a slight thickening, and uniform deposit of fibrin, in the membrane ; and the white spots exist when the fibrin is thrown out more abundantly in minute tubercles. The iris appears usually dull, even in the slightest cases : this is frequently owing to the change of the medium through which it is viewed ; but it sometimes results from a positive change in itself, as it participates in the inflammatory action, which extends to it from the aqueous membrane, by vascular connection. In such instances, the pupil is small, occasionally irregular,

and the motions of the iris are excited with difficulty, and the iris is discolored.

Three cases have come under my observation, which have proved to me, most satisfactorily, the extension of the aqueous membrane over the iris, continuous from that which lines the posterior surface of the cornea. In each of these cases slight cloudiness of the membrane existed, and the iris appeared dull and incapable of reflecting light, though not altered in color; and small tubercles could be easily perceived, both on the corneal and iritic portions of the membrane, varying from the minutest point to the size of the head of a large pin.

In the slighter cases of this disease, there does not exist any evidence of conjunctivitis or scleritis; but in the more severe cases, both the conjunctiva and the sclerotic have their vessels partially filled with red blood; the former very partially, and the latter more extensively so: and the vessels thus apparent in the sclerotic coat are situated near or close to the margin of the cornea, forming a partial or complete, but rarely a regular zone.

Causes.

Such as induce the simple forms of inflammation of the conjunctiva.

Persons
liable to.

The disease is most frequent in persons below the middle period of life, though it rarely attacks children; but is most frequently seen in persons

of scrofulous habit, or in such as have not much constitutional vigor.

Are the same as occur in connection with cor- Modifications. neitis.

In plan and principle, should be the same as Treatment that recommended for the cure of corneitis; namely, the mild and guarded use of mercury: attention to the secretions, and at the same time support of the general power, with occasional blisters, if there be much intolerance of light; and, in all cases, only tepid water as a lotion to the eyes. It is always well to apply belladonna, in substance or solution, twice a day, to keep the pupils dilated; otherwise, if the iris become implicated in the disease, adhesions may take place between its pupillary margin, and the anterior capsule of the lens, which may ever after prove injurious to the vision. In all cases, in which it is evident that the iris participates in the morbid action, mercury should be administered as freely as the general constitution of the patient will admit of, until the disease in this important texture be subdued.

I must give two of the cases alluded to; one of the simple kind, and the other of a more complicated nature, which will further serve to explain the principle of treatment.

40. Miss G——, aged sixteen years, of delicate form, very fair complexion, and having light

hair, and beautiful blue irides, was brought to me by Mr. Field, of Rotherhithe, in consequence of an imperfect state of vision. She complained of a slight mistiness affecting both eyes, principally, however, the right ; but did not suffer from pain or intolerance of light. On examination of the eyes, I discovered an exceedingly slight cloudiness ; which, on direct view, appeared to be in the cornea, ^{*} but, on careful oblique inspection, was clearly ascertained to be in the aqueous membrane. The pupils were slightly contracted, and the motion of the irides very slow ; in the right eye five spots could be perceived, three on the corneal division of the aqueous capsule, and two on the iritic part of the membrane. The smallest was about the size of the head of a very small pin, and the largest about the bulk of a small shot. The largest was situated on the membrane covering the iris, nearly mid-way between its outer circumference and the pupillary margin, towards the temporal side ; and a smaller tubercle existed near to the larger, at the margin of the pupil. In the left eye, three spots only could be discerned, and one of these only was connected with that part of the membrane which covers the iris. The color of the iris was not at all affected, shewing that its texture remained free from morbid action. The general and more important functions were regularly performed.

I prescribed small doses of mercury with chalk, and antimony, night and morning, and directed that she should have a nutritious diet, moderate exercise when the weather permitted, and warm clothing; that belladonna should be applied, night and morning, to the eyebrows, and that tepid water should be used occasionally as a lotion. We were obliged, two or three times, to interrupt the mercurial treatment, in consequence of its producing disturbance of the bowels; but, as this originated from some imprudence in diet, it was easily corrected, and we were enabled to resume the use of the mercury speedily. Otherwise, the arrest and subsidence of the morbid action was gradually effected. The general haze first disappeared, and then the tubercles became gradually absorbed, leaving the eyes as clear and perfect as if they had never been affected. The treatment also made a favorable change in the general health of the patient; the circulation becoming more vigorous, and the general power greater, as she recovered from the effects of the medicine. For a short period, during the treatment, the gums became slightly tender and spongy; but immediately this occurred, the quantity of mercury was lessened, so as to prevent any extensive action on the mouth.

This case illustrated most beautifully the influence of steady and mild mercurial action, on

local fibrinous deposit, without injury to a delicate and rather feeble person, though continued for a period of between five and six months.

Case.

41. The more complicated case to which I have alluded, was in the person of a female of stout make, though feeble power, having light complexion, and blue irides. She applied at the Ophthalmic Hospital in consequence of an attack of scleritis, in connection with symptoms of a rheumatic character, affecting the arms and shoulders. She had been treated principally by depletion ; as the abstraction of blood, by cupping and leeches ; by purgatives ; by low diet ; by blisters, &c. She had also taken colchicum and mercury in considerable quantities. There existed a large patch of a dull purple color, at the nasal side of the cornea, and this resulted from numerous vessels of the sclerotic, which were filled with dark red blood ; and over these a few of the conjunctival vessels also, distended with colored blood, could be distinguished. The globe was tender to the touch. She had a dull aching pain in it, and also on the cheek and forehead, and these pains became much aggravated at night. The light was not painful, nor was there any super-abundance of secretion, excepting during the paroxysms of pain, when she said that the eyes discharged a little hot, or scalding, but clear fluid. There was, at this time,

no evidence of disease of the aqueous membrane, but it appeared to be a case of pure scleritis; and, accordingly, she was directed to take a plain nutritious diet, and refrain from acid food; but she was allowed a small quantity of beer, which she had been in the habit of taking when well. Besides, small doses of bark and soda were prescribed every six hours, with an occasional mild aperient, and a small blister behind the ear. The scleritis was much relieved by these remedies; but she took cold in her journey to or from the Ophthalmic Hospital, as she resided at a distance of above eight miles from the Institution. This was followed, not by an aggravation of the inflammation of the sclerotic, but by an affection of the aqueous membrane. The anterior chamber became slightly cloudy, from a low morbid action attacking the entire aqueous membrane; and besides the slight general thickening of this tunic, its surface became spotted by small tubercles of fibrin. The majority of these tubercles formed in connection with the corneal part of the membrane; and a few appeared on the iritic portion: one tubercle in particular, on this part of the aqueous capsule, acquired a size equal to that of a partridge shot. This was seated to the outer side of the pupil, between its margin and the outer circumference of the iris, but rather nearer to the former. The iris itself

retained its proper color ; and its texture did not at all appear influenced by the morbid action. As her general power was still feeble, having suffered much from active treatment before I saw her, I thought it right to be cautious in the use of mercurials, which I was satisfied would subdue the disease, if properly administered. I began by giving her a twentieth part of a grain of the bichloride of mercury, with some compound decoction of sarsaparilla, thrice a day ; and directed a small quantity of mild mercurial ointment to be rubbed on the forehead above the eyebrow, each night. The diet, &c., was to be as previously directed. Under this treatment her general health improved ; but the ocular disease rather increased. I then very gradually augmented the dose of the bichloride of mercury, until she took an eighth of a grain, thrice a day, and continued the other remedies. Still the local disease did not yield ; although it did not perceptibly advance. The bichloride caused some disturbance of the bowels ; and I therefore prescribed instead of it, small doses of the mercury with chalk, with extract of hemlock, night and morning ; and persevered, otherwise, in the former treatment. The mouth became slightly affected after she had taken the mercury with chalk, in two grain doses, for rather more than a week ; and immediately a favorable change took place

in the eye. I diminished the dose of the mercurial, as I did not wish the system to be so influenced by this medicine as to occasion distress ; and, with the diminished dose, I succeeded in removing all evidence of morbid action, from the aqueous tunic ; and, at the same time, with a nutritious diet and tonic medicine, her general health became re-established. The treatment of the case occupied nearly three months. The patient has since remained well; but has been careful in diet, and has avoided exposure to cold and damp. Many months have elapsed since the disease in the eye disappeared.

INFLAMMATION OF THE AQUEOUS MEM-
BRANE, PRODUCING EFFUSION OF
PUS, WITHOUT ULCERATION.

THIS result is fortunately extremely rare, and is always in connection with severe inflammation of many other of the textures of the globe.

Local symp-
toms.

It commences with throbbing and darting pains in the globe, with intolerance of light, lacrimation, sensation of heat, and tension : the pains extend around the orbit, especially to the forehead and temple—vision is soon destroyed.

Constitutional
symptoms.

As the disease advances, much constitutional disturbance occurs.

Appearances.

Considerable conjunctival inflammation, usually with partial chemosis, from deposition of serum between the conjunctiva and the sclerotic—the color resulting from the injection of the conjunctival vessels is dull : if any portion of the sclerotic be visible, its vessels may be also seen distended with red blood ; the cornea is hazy, from thickening of the aqueous membrane, and

the anterior chamber is partly or entirely filled with pus. If any part of the iris can be discerned, it is dull, discolored, and without motion. The cornea at last sloughs, or ulcerates, extensively, the pus escapes, the iris protrudes, and staphyloma results ; or sometimes the humors are ejected, and the tunics collapse.

I have known this severe disease commence Causes. without any obvious reason, especially in old and feeble persons—but, more generally, it is induced by some injury : it sometimes follows the operation of extraction in elderly persons.

It is very rare in young persons.

Persons
liable to.

Treatment.

The disease is usually so rapid in its progress that there is seldom much prospect of saving vision : the prognosis is always unfavorable.

In the first place, the local abstraction of blood by leeches, or by the cupping-glass, should be resorted to ; the latter is best, when the powers of the patient are such as to bear the loss of several ounces of blood : I have seen the disease in persons of such feeble power, that such treatment could not be adopted. Immediately after the blood-letting, a large blister should be applied to the temple and forehead, or to the neck. The eye should be fomented with decoction of poppy heads, or chamomile flowers.

A mild or active aperient should be administered, according to the condition of the bowels ;

and, as soon as action has been obtained from the bowels, a full dose of Dover's powders, with a small quantity of mercurial, should be given. The diet should be sparing.

By this treatment I have known the disease checked ; and the patient recover, by attention to the secretions, a moderately nutritious diet, and the use of some mild tonic, as small doses of bark and soda, or quinine : for, immediately the inflammation is arrested, it is generally necessary to lay aside all depletory measures, with the exception of blistering ; which, by repetition, tends very much to expedite the absorption of the pus. Should the acute symptoms continue, there should, of course, be a further application of leeches, or of the cupping-glass.

Supposing that the disease has advanced so far, that the chambers are full of pus, and the suffering severe, it would be right to make a free section of the cornea, to relieve the tension, and to allow of the escape of the matter ; but, previous to doing this, the patient should be made distinctly to understand, that the operation will not restore vision, but only diminish suffering. The section of the cornea is not directly followed by escape of the whole of the pus ; for the secretion is usually so thick and tenacious, that it adheres to the surface of the aqueous membrane.

In some cases I believe that inflammation commences in the aqueous membrane, of a very acute character, which runs on rapidly to the secretion of pus without ulceration ; but that ulceration sometimes takes place subsequently—the surrounding textures become soon implicated in the disease.

OF INFLAMMATION AND ULCERATION OF
THE AQUEOUS MEMBRANE.

Symptoms. **T**HIS affection often commences without pain or uneasiness ; and the only circumstance which induces the patient to seek medical aid, is the alteration in vision, which becomes dim.

More generally, however, there is pain, and a sense of tension of the globe ; sometimes intolerance of light, with lachrymation and heat—and, at times, the suffering is severe.

Appearances. In the milder cases, some few of the vessels of the sclerotic tunic are filled with red blood, forming a dull red zone around the margin of the cornea : the cornea itself, when viewed directly, has at first a uniform hazy aspect, but when viewed obliquely, its anterior surface and greater substance are found to possess their usual transparency ; whilst the cause of the cloudiness is ascertained to exist, in connection with its posterior surface—much as a mirror, when viewed directly, appears metallic, but when viewed ob-

liquely, the glass anterior to the metal becomes evident. The iris and humors, as seen through this altered medium, appear dull—the pupil is usually somewhat contracted, and the motions of the iris sluggish. After some time, the haziness on the posterior part of the cornea becomes more dense in one part; (this is most frequently near the centre;) and this spot gradually increases, exhibiting an opake white centre, and a circumference gradually shaded off into the surrounding semi-transparent cloud. *See plate 2, fig. 1.*

With this change of appearance the symptoms become more urgent; some degree of ophthalmia usually exists, and the vessels of the sclerotic filled with red blood, are more numerous,—but the color is still dull.

Further, the centre of the opake spot undergoes a change; loses its dense white aspect, and exhibits a small space with irregular defined edges: this is an ulcer of the aqueous membrane. The ulceration is attended with the formation of pus, which escapes into the anterior chamber, and occupies the most depending part of this space, (*onyx*,) and is, therefore, usually seen at the lower part, when the patient is erect. (*See plate 3, fig. 2.*) The quantity of pus is generally in proportion to the extent of the ulceration, and varies from the smallest visible portion, to as

much as will occupy a fourth or third, or more of the chamber. I have very rarely seen it rise to a level with the lower margin of the pupil. The pus is of a cream-color, and presents a figure, corresponding to that seen at the base of the nail of the thumb or fingers of some persons ; hence the term onyx. I have frequently noticed a yellow streak, extending from the ulcer to the surface of deposit ; shewing, clearly, the source from whence the matter is derived. The level surface of the deposit indicates its fluidity ; but this can be, perhaps, more satisfactorily ascertained, by causing the patient to alter the position for a few minutes, and recline, so as to make the temporal or nasal side of the cornea the lowest, when the pus will gravitate to this part ; this change is, however, very slow, in consequence of the thickness and tenacity of the fluid.

When ulceration has taken place, the general haziness of the aqueous membrane usually diminishes, and sometimes the opake circumference of the ulcer disappears, so that the ulcer is not readily distinguished : there is, however, more evidence of increased action in the conjunctiva and sclerotic ; so much so, in some cases, that at a short distance, a uniform, deep, but dull red color is presented.

The ulcer, if neglected, penetrates the substance of the cornea, and eventually opens ex-

ternally ; when the aqueous humor escapes with part of the pus, and the iris prolapses.

In severe cases, the iris participates in the inflammation, when it becomes thickened, and altered in color ; the pupil contracts, and adhesions form, between its pupillary margin and the anterior part of the capsule of the crystalline ; the capsule is rendered opaque, or fibrin fills the pupil.

This disease is most frequent from exposure Causes. to damp or cold—but I have often known it to arise from injury.

It occurs at all ages, but is very rare in the Persons liable to. infant : in children it is most generally idiopathic ; in adults often traumatic.

In the first stage, before ulceration has commenced, the disease can be easily checked and subdued, by counter-irritation, as blisters to the temple or neck ; a brisk aperient, followed by small doses of calomel and antimony, combined, when there is general irritability, with narcotics ; an abstemious diet, and perfect rest of the organ —the eye should be cleansed, twice or thrice in the day, with tepid water.

When ulceration exists, with onyx, more active treatment is necessary ; leeches or cupping on the temple, followed by blistering ; free action on the bowels, and abstinence, will be requisite in the commencement ; and, afterwards, the sur-

geon must be guided, principally, by the appearance of the ulcer, and extent of the surrounding inflammation.

As long as the ulcer exhibits a dense white circumference, and there is much accompanying ophthalmia, or scleritis, the depletory treatment must be persevered in ; but, as soon as the surrounding inflammation begins to subside, and the ulcer itself loses its defined character, and becomes confounded with the surrounding opacity, the healing process is indicated, and active measures are no longer necessary—the diet may be improved.

When the ulcer is without an opake circumference, and is itself transparent, although the vessels of the conjunctiva and sclerotic may be carrying red blood, the case requires tonic treatment. This form is most frequent in children with feeble power ; and its distinction is highly important, as depletion inevitably leads to extension of mischief ; whilst the opposite plan, pursued with care, rapidly effects a cure. If there be pain or intolerance of light, blistering is serviceable ; the bowels are to be regulated by a mild aperient ; a nutritious diet should be allowed ; but, when the power is very low, and the appetite indifferent, small doses of bark, or of quinine, are necessary ; with the addition of dilute sulphuric acid, when the patient has inordinate action of the skin.

I do not consider local applications of much service, in either form ; but if emollients are grateful to the patient's feelings, they may be employed.

When ulceration and suppuration have commenced, mercury will not arrest the disease ; but will, if given to affect the system, rather aggravate than retard the mischief. It is only necessary, therefore, to aid the effects of purgatives or diaphoretics.

OF INFLAMMATION OF THE AQUEOUS MEM-
BRANE, WITH INCREASED SECRETION.

THIS is a rare disease.

Symptoms.

In the early stage, a dull pain, intolerance of light, and dimness of vision : at a more advanced stage, acute pain with a sense of excessive tension of the globe, which is extremely tender to the touch—intolerance of light augmented, and vision more obscured. Sometimes there are circum-orbital pains.

Appearances.

Slight ophthalmia ; a faint zone of a dull red color in the sclerotic around the cornea ; a uniform cloudiness of the aqueous membrane, but so slight as still to allow the iris and pupil to be seen with tolerable distinctness ; the iris dull, sometimes a little altered in color, the pupil contracted, and the motions of the iris impeded. The space of the chambers increased, and the iris presenting a concave anterior surface. As the disease advances, the vessels of the conjunctiva and sclerotic, become more abundantly filled with red blood.

I have not been able to trace any.

Causes.

I have not seen this disease in any persons under the adult age, and but rarely in persons advanced in life.

Persons liable to.

In the milder cases, blistering to the temple Treatment. or forehead, with emollient applications, are the best local remedies. Rest, exclusion of light, mild purgatives—small doses of mercury and antimony, and a moderate diet, are otherwise most serviceable.

When the size of the chambers is manifestly augmented, or when the globe feels very tense and tender, and there is much ophthalmia, or scleritis, immediate relief will be obtained by evacuating part of the aqueous humor. The operation requires great care in its performance, otherwise, injury to the iris or lens may occur, which would lead to more serious mischief.

The patient being seated upon a low chair or stool, opposite the light, the surgeon (provided with a broad flat needle,) should receive the patient's head against his breast, as he stands behind the patient; he then elevates the superior lid, by placing the point of the fore finger on its free or ciliary margin, and pressing it upwards against the supercilium; at the same time keeping the point of the finger against the globe, to prevent eversion of the lid, and to assist in fixing the globe: the point of the middle finger is then

to be placed, on the ocular conjunctiva, close to the inner canthus, to aid in keeping the globe steady. The needle is to be introduced through the cornea, near to its junction with the sclerotic, at the temporal side, in such a manner, that one flat surface of the instrument is presented forwards, and the other backwards, to the iris ; when the needle has fairly penetrated the anterior chamber, it is to be slightly rotated, so as to incline one of the edges forwards, and the other backwards ; this separates the edges of the wound, and the aqueous fluid gradually escapes : as soon as the surgeon perceives that the chambers are nearly empty, he should withdraw the needle, and let go the lid, when the edges of the wound approximate, and any further escape of fluid is prevented. If the whole of the aqueous humor be evacuated, the iris is pressed against the cornea, and the patient suffers severely, until these parts become again separated by fresh secretion.

This should be followed up, by the local and general treatment previously directed.

I have several times known this operation not only to produce immediate relief of suffering, but to be followed by a rapid subsidence of disease.

In other cases I have had to repeat the operation, two or three times, in consequence of fresh accumulation of fluid giving rise to the same

symptoms. In repeating the operation, I prefer introducing the needle at a new place, to ensure a quick and firm union of the wound.

We have ample evidence, in some of these Consequences. cases, of extension of inflammation to the iris, sclerotic, and conjunctiva ; and, it is probable, that the choroid would also be involved, on the continuance of the disease. I have only seen one case in which any permanent mischief resulted.

42. A man, about forty years of age, applied Case. at the Ophthalmic Hospital, having suffered for some time from this affection. He complained of great pain, and tension of the globe, which was extremely tender to the touch ; he suffered from intolerance of light, and his vision was nearly destroyed—there was considerable inflammation of the conjunctiva, sclerotic, and iris ; the latter being dull and of a deep green color, the pupil contracted, but regular : the chambers were enormously increased, the anterior surface of the iris appeared as concave on the posterior surface of the cornea. I evacuated the greater part of the aqueous fluid, which relieved his severe suffering, and produced immediate change, in the appearance of the conjunctiva, sclerotic, and iris ; in the two former, the number of vessels carrying red blood diminished considerably, and the latter lost its deep green tinge, becoming

more of a grey, the original color. I further directed a blister to the temple and forehead, two grains of calomel and three grains of antimony, night and morning, an occasional aperient, rest, and an abstemious diet ;—in two days I had to repeat the operation of evacuating the aqueous humor ; after which the disease gradually subsided under a continuance of the other remedies —he did not however recover vision ; it improved to enable him to distinguish large objects ; but he described every thing viewed with the eye, as if seen through a mist ; and this condition of vision remained, when all diseased action had long ceased.

I conceive that the permanent affection of vision in this case arose, either from the long continued pressure, in consequence of the increased secretion of aqueous fluid ; or, from deposition, in connection with the choroid tunic, which had become implicated in the inflammatory action.

A N A T O M Y
OF
T H E I R I S.

THE iris is named from the variety of colors it presents in different individuals.

It is a delicate membrane, situated within the anterior part of the globe, behind the cornea, and before the crystalline lens.

Its circumference is nearly circular, and is fixed in a groove of the ciliary ligament; anteriorly and posteriorly it is flat; near its centre is a round opening which forms the pupil of the eye, but which is usually placed rather nearer to the nasal, than to the temporal side of the membrane; the size of this aperture varies almost every instant, in the healthy eye, when the organ is employed.

The anterior surface of the iris is covered by a portion of the aqueous membrane; it is, at its

outer circumference nearly in contact with the cornea ; but in the centre, the distance between the two increases, the iris being flat, whilst the cornea projects ; the space between the two is the anterior chamber, and contains aqueous humor.

The posterior surface of the iris is lined by a quantity of dark pigment, which has obtained the name of uvea ; in the space between the ciliary processes, this pigment is continuous with that of the choroid coat : the uvea is retained in position by a continuation of the aqueous membrane, which passes from the anterior surface of the iris, through the pupillary aperture, and is thence spread out behind the iris, supporting the pigment ; behind this are the ciliary processes, and the anterior capsule of the crystalline lens : the iris is not united to the former ; but the aqueous membrane exists between these processes and the iris, and also between the iris and capsule of the lens ; leaving a space which is the posterior chamber of the eye—it is of very small extent, in comparison with the anterior chamber, with which it communicates freely by the pupillary opening ; and it (as the anterior) is filled with aqueous fluid : thus the iris has aqueous fluid before and behind it, and may be considered, in the greater part of its extent, to float in aqueous humor.

The texture of the iris is soft and rather pulpy, like the choroid, which it exceeds in thickness ; but its thickness is not uniform, being greatest at the outer circumference, where it is attached, and least at the edge of the pupillary opening.

The anterior surface of the iris exhibits the variety of colors which give character to the eyes ; such as blue, grey, hazel, brown, &c. This color is seldom uniform, but is usually much deeper in some parts than in others ; generally, two circles of different tint or color are perceptible, a larger and outer one, and a second internal and smaller ; the latter is usually of the deepest color. Sometimes the surface is beautifully mottled, whilst at others it is partly colored ; and it is not uncommon for the irides of the same person to be of a different hue. When closely viewed, a fibrous arrangement is also apparent on the surface ; the fibres are placed in a direction from the ciliary ligament to the pupil, they are waved or tortuous in their courses, the degree of flexuosity depending upon the state of the pupil ; being great when the pupil is dilated, and but little when the aperture is much contracted.

The structure of the iris is made up of blood vessels, nerves, absorbents, and muscular fibres ; —the blood vessels, nerves, &c., are placed on the anterior part, the muscular fibres on the posterior. The existence of muscular fibre in the

iris, is now, I believe, allowed by the majority of modern anatomists: certainly, other fibres can be traced besides those apparent, from the peculiar distribution of blood vessels. Two muscles exist, one encircling the pupillary opening, constituting an orbicular muscle, and another radiated from all parts of the outer circumference of the orbicular muscle, to the outer attachment of the membrane: by the action of the former, the pupil is contracted; and by that of the latter, it is dilated.

Mr. Dalrymple has been kind enough to shew me the muscular fibre of the iris under a very powerful microscope, and has enabled me to compare it with other muscular fibre, so as to satisfy me perfectly of the structures being similar. Maunoir, Monro, Bauer, &c., have delineated these muscles as seen by them with the aid of the microscope; and Maunoir, has published the results of some experiments, which are very conclusive in determining the arrangement of muscles which I have described.

The iris is highly organized. Its arteries are derived from the two long ciliary vessels, and some of the anterior ciliary arteries,—the former penetrate the sclerotic coat behind, and are continued between it and the choroid; one on the nasal side of the globe, and the other on the temporal side, (directly on the transverse axis of

the ball,) as far as the ciliary ligament, which they penetrate ; and then divide into branches, which embrace the outer margin of the iris, and anastomose, so as to form a large vascular circle ; from the interior of this circle, branches radiate towards the pupil, and by anastomosis form a second circle at a short distance from the pupil ; from this again, minute branches radiate to the margin of the pupillary aperture, and a third circle is there formed in a similar manner.

The veins, which are numerous, return the blood in part to the long ciliary veins, and in part to the *vasa vorticosa* of the choroid membrane.

The vessels of the iris communicate freely with those of the ciliary processes and choroid, as well as with the anterior terminations of the sclerotic vessels, at the ciliary ligament ; they also anastomose freely with the delicate vessels of the aqueous membrane.

The nerves of the iris are very abundant, and are derived principally from the lenticular ganglion. The branches emanating from the ganglion, divide into two sets, superior and inferior ; they are about twenty in number ; they perforate the sclerotic coat, at its posterior part ; some near to the entrance of the optic nerve, and others more forward ; they then run between the sclerotic and choroid, without supplying either,

to the ciliary ligament, the substance of which they enter, each dividing into two or three branches ; which again subdivide to be distributed to the iris, and principally to its anterior surface. The iris also receives some fine nervous filaments from the nasal division of the fifth pair.

This membrane has an important office to perform in the function of vision, by regulating the quantity of light, admitted to the retina, and thereby preventing confusion of vision. It reflects light powerfully in a healthy state, and, in consequence, possesses a very brilliant appearance—this property is soon diminished or destroyed under morbid action.

OF THE MEMBRANA PUPILLARIS.

UNTIL near the seventh month of uterine life, the foetus has the pupils of its eyes occupied by a fine and delicate membrane, semi-transparent, and organized from the vessels of the iris. After the seventh month it usually disappears, but portions of it may sometimes be distinctly traced in the pupil of the full grown foetus: I have several times injected it at this period.

OF THE
MORBID CONDITIONS
OF THE IRIS.

THE morbid conditions of the iris result mostly from inflammatory action, of which two forms are recognised—acute and chronic; and it undergoes various changes in consequence of inflammation.

It is also liable to paralysis, so that its motive power is destroyed.

Sometimes its tension is destroyed, and it appears to float loosely in the aqueous fluid, shaking or becoming tremulous on the slightest motion of the eye.

It is frequently torn or divided by injury, and sometimes separated in part from its attachment to the ciliary ligament.

It also becomes attached in consequence of disease or injury to the cornea, or to the anterior capsule of the crystalline lens.

INFLAMMATION OF THE IRIS.

IRITIS.

Synonyme.

Most modern authors describe several varieties of this disease ; but I deem such division of the subject to be of no practical utility, with the exception of a division into acute and chronic, which I shall therefore adopt. In fact, I do not admit of the distinctions which have been attempted ; but I consider inflammation of the iris to be the same, whatever may be its mode of origin : it may, and does vary in intensity, and in rapidity of progress ; and these circumstances are depending more upon the condition of the constitutional power of the party affected, than upon the mode of origin ; a specific taint by its influence upon the system, no doubt, in many cases modifies the local disease. I cannot allow, therefore, that idiopathic, traumatic, syphilitic, rheumatic iritis, &c., are distinct diseases, but one and the same affection, generated by different causes ; much as I believe, and have de-

scribed, purulent conjunctivitis to be of one kind only, though produced by a variety of simple and specific causes.

Pure iritis, as a consequence of rheumatic, or arthritic diathesis, I believe to be a very rare disease; but as a secondary affection, in connection with such peculiar condition of system, iritis is frequent. *See Sclero-iritis.*

OF ACUTE IRRITIS.

SLIGHT pain and redness of the eye are usually symptoms, the first symptoms which induce a patient, subject to iritis, to seek medical aid ; but frequently, from the little suffering experienced, the disease is allowed to proceed until the vision becomes impaired, and objects appear as if seen through a gauze or mist ; and, generally, numerous grey or dark muscæ, or spots, are also perceived, in the field of vision, at the same time ; this indicates extension of mischief to the choroid tunic. In some instances, scarcely any pain is present, not only at the commencement of the disease, but throughout its progress, whilst in other cases the suffering is considerable ; and the patient experiences an aggravation of suffering towards evening or during the night, when the globe is tender to the touch, and the pain often extends to the temple, forehead, or cheek : this pain is, however, not occasioned by the disease in the iris, but by extension of it to the sclerotic coat, which

soon participates in the diseased action. These symptoms are increased by the recumbent posture, or by a full meal, or by any thing which augments the determination of blood to the part. Frequently, exposure to light is painful, causing an increased flow of tears ; sometimes the intolerance of light is so great that the patient can scarcely bear an examination of the eye ; whilst, occasionally, the patient does not suffer at all, even from the presence of a bright light. Intolerance of light is by no means a constant symptom of iritis.

As the disease advances, the dimness of vision increases, until perception of light is lost ; at the same time the pain gradually augments. Inordinate lachrymal secretion only occurs, when intolerance of light exists.

Appearances.

The first change perceptible is in the iris, which loses its brilliancy and acquires a dull aspect, absorbing the rays of light instead of reflecting them, as it naturally does ; the pupillary aperture also becomes contracted, and the motions of the membrane are impeded, so that the pupil dilates and contracts slowly, on the admission or withdrawal of light. If the iris be naturally of a grey or blue color, it soon assumes a greenish hue, from a deposition of fibrin into its texture ; if, however, the natural aspect of the part be brown or hazel, scarcely any change of color

occurs in the commencement of the disease ; but in its more advanced stage, the iris acquires a reddish brown tinge.

The aqueous humor often appears cloudy, from the membrane becoming slightly thickened, in consequence of the morbid action extending to it.

What is considered as one of the principal diagnostic marks of the disease, is a zone of vessels around the margin of the cornea, which, at a short distance, gives the appearance of a uniform dull red belt ; but when closely viewed, the zone is found to be most dense in color close to the cornea, and to be gradually shaded off at its larger circumference ; it is composed of numerous and closely compacted minute vessels in the sclerotic tunic, which are filled with red blood : the courses of these vessels are nearly straight and parallel, passing from the margin of the cornea towards the orbital margin : (*see plate 3, fig. 1 :*) this zone varies much in extent and in depth of color, as the disease is mild or severe. The free anastomosis which exists between the vessels of the iris, and those of the sclerotic through the ciliary ligament, readily explains this appearance. In some cases, a grey line exists between the margin of the cornea, and the red zone ; which line is sometimes complete, occupying the entire circumference of the cornea,

(*see plate 3, fig. 3,*) but occasionally partial, and situated at the temporal and nasal sides, or very rarely above and below the margin of the cornea —the cause of the partial or complete line, is explained elsewhere: (*see Sclero-iritis:*) usually, a few conjunctival vessels are also found carrying red blood: they are of much larger size than those forming the zone; they are more tortuous in their courses, and of a different color; by slight pressure, with the point of the finger, they can be made to move over the vessels of the sclerotic.

As the disease advances, the aspect of the iris becomes duller, its color more altered, and its motions more impeded; the pupil loses its circular figure, and becomes irregular, from partial adhesion of its margin, to the anterior capsule of the lens; (*synechia posterior;*) the vascular zone enlarges and assumes a deeper hue; the aqueous membrane gets more and more turbid; and small tubercles of fibrin are frequently deposited on the surface of the iris, most commonly at or near its pupillary margin; sometimes at its larger circumference; and, occasionally, between these two positions. (*See plate 3, fig. 1.*) The effused matter is at first of a light yellow color; but subsequently, acquires an orange or reddish brown aspect; and this change takes place more or less quickly according to the rapid or gradual

progress of the disease. The tubercles of fibrin are rarely formed together, but one appears soon after another ; and the deposition of fibrin is sometimes so great, as nearly to fill the anterior chamber : usually, before any distinct tubercles are to be seen, an effusion of fibrin takes place, at the pupillary margin of the iris, so as to cause partial adhesions between this part, and the anterior capsule of the crystalline lens. In very severe cases, after several tubercles have been formed on the iris, some of them suppurate, and discharge their pus by ulceration into the anterior chamber, and onyx is produced.

The disease is usually more rapid in its progress, and altogether more severe, when connected with specific taint ; therefore, the symptoms, which I have described, are more quickly developed. The peculiar color of the fibrin which forms the tubercles, does not, however, depend on any peculiarity in the disease, independent of its acuteness ; if the local action be moderate, the effused fibrin remains of a yellow color for a long period ; but if the local action be great, the fibrin deposited soon becomes organized by vessels carrying red blood, and thus it acquires a reddish brown color. The disease, connected with specific taint, being usually more severe than that of the idiopathic kind, the fibrin is more frequently found of a reddish color

in the former, than in the latter instance ; but I have frequently seen the fibrin of this reddish color, when the iritis has been of simple kind.

In some few cases, I have seen the vessels of the small arterial circle of the iris filled with red blood, so as to color the part deeply ; and have also discovered small spots of extravasation of red blood, in or upon the anterior surface of the inflamed structure.

Constitutional symptoms.

When the iritis is idiopathic, or traumatic, the constitution is not affected ; but when it is connected with specific disease, there is usually present other general evidences of syphilitic taint, in the form of cutaneous eruptions, or inflammation of the mucous membrane of the throat. I have witnessed the ophthalmic disease, with all the varieties of cutaneous eruptions, as papular, tubercular, pustular, &c.

Causes.

The idiopathic form of iritis is produced by those causes, which give rise to inflammation in the other textures of the eye ; and, probably, such are also the existing causes of the local affection, when general specific disease exists.

Persons liable to.

Iritis, as a simple affection, rarely occurs in persons under the age of puberty ; but it is not uncommon in children, as a secondary disease, or combined with, and dependant upon, a morbid action in some other texture, with which the iris has vascular connection, especially the choroid.

State of general power, derangement of important functions, and peculiar condition of system, are the principal circumstances which modify the iritis. Modifications.

The early stage of this disease may be arrested and subdued very readily, by the exhibition of mercury; and in the severe and aggravated cases, I believe that, by a proper administration of this remedy, a useful degree of vision may be restored in a large majority, and all in which the disease has not produced disorganization. Treatment.

Mercury appears not only to arrest the inflammatory action, but further to promote absorption of the fibrin, which is the common product of the morbid action in the iris; and which occasions changes destructive of vision. If this fibrin has not become organized, before the commencement of the mercurial treatment, I believe that nearly perfect vision may be restored, although little or none exists before treatment: but if organization of the new deposit has taken place, the extent of recovery of vision, by medical treatment alone, will be very doubtful.

In the milder forms of iritis, or before the morbid action has occasioned irregularity of pupil, or formation of tubercles, small doses of mercury in combination with opium, to prevent action on the bowels, are proper, in the propor-

tions of one or two grains of the former to a third of a grain of the latter, every six or eight hours ; besides this, however, attention should be given to the secretions, the diet should be very moderate, and some extract of belladonna should be kept on the eyebrow, a fresh quantity being applied night and morning, and the part cleansed before each application ; the object of such application is to produce a dilated state of the pupil, so as to prevent any adhesion from forming between the pupillary margin of the iris, and the anterior capsule of the lens, whilst the pupil is contracted ; when the adhesions would be more likely to interfere with the vision. The patient should be carefully watched, in order that the quantity of mercury may be increased, should the iritis advance, or that it may be lessened as the disease yields to its influence.

In the more acute forms or more advanced stages of the disease, mercury should be given in larger doses and at shorter intervals ; and at the same time, if there be much affection of the sclerotic and conjunctiva, with pain of a continued kind, much good will result from the local abstraction of blood by a cupping-glass to the temple, or by leeches applied to the eyelids. The principal object should be to produce mercurial influence as speedily as the condition of the pa-

tient will permit ; for, as certain as mercurial action takes place, so certain will be the arrest of the inflammation.

The largest quantity of mercury which I have given for iritis, has been five grains of calomel combined with a small quantity of opium, every four hours, and thus continued to fourteen doses.

43. It was in the case of a young woman who Case. was the subject of iritis, connected with syphilitic taint ; the disease existed in both eyes, and so much fibrin had been deposited as nearly to fill the anterior chamber in each eye, and completely to obscure the pupils ; she had, however, perception of light ; the fibrin was of a light yellow color :—she had also a plentiful crop of tubercular eruptions on the skin, and some slight affection of the mucous membrane of the throat.

Immediately that the system became affected by the mercury, the progress of the inflammation became arrested, and a rapid absorption of the fibrin subsequently took place ; so that within ten days, from the commencement of the treatment, the recovery from the iritis was complete, and she could see to read a minute print ;—eventually, it would have been difficult to have told that iritis had ever existed ; for the irides, which were naturally blue, became brilliant, the pupils

were perfectly round, and the motions of the irides natural—the treatment also removed the evidence of syphilitic taint, with the addition of sarsaparilla, which she took for several weeks.

I am so satisfied with the efficacy of mercury, in these cases, that I deem it almost a specific in pure iritis. It is probable, as asserted by some authors, that this affection may be subdued without the aid of mercury, by the ordinary depletory treatment, which is usually employed in common cases of inflammation. I am of opinion, however, that there is considerable risk in such mode of treatment; as I have known many cases, in which it has been pursued to a great extent, and has nevertheless failed in subduing the disease; although it has mitigated its severity, and arrested its progress to a great extent; but a chronic stage has supervened, which has gone on in a slower, but not less certain way, to the ultimate destruction of vision.

The mercurial plan of treatment I consider to be safe and certain, when carefully pursued; the anti-phlogistic plan I consider to be uncertain, and therefore unsafe; and if it do succeed, it does not effect a cure in double the time at least, in which mercury annihilates the disease.

The following cases, which are nearly similar to many that I have seen, will serve to illustrate these observations.

44. A man of middle age, applied at St. Case. Thomas's Hospital, having a simple form of pure iritis in one eye, he was pallid and appeared much depressed ; he said that the disease had existed nearly two months, and that it had been rather worse ; he had undergone severe treatment altogether of a depletory kind, under an oculist ; but he had obtained little relief as regarded the local disease, and had suffered much from constitutional disturbance. I pointed out the case to the pupils as one which would be easily remedied by mercurial treatment ; but observed that, at the same time, it would be necessary to improve the general strength. I prescribed one grain of calomel and a quarter of a grain of opium combined, night and morning ; sarsaparilla thrice a day ; an occasional aperient ; belladonna to the eyebrow ; and a good nutritious diet, with a small quantity of stimulus. In three days the patient's mouth became slightly affected, and the local disease decidedly diminished ; one dose of the mercury per diem was discontinued, and the other parts of the treatment persevered in : at the expiration of a week, the eye was perfectly well, and the general health of the patient materially improved ; he continued the sarsaparilla for three or four weeks, when his health appeared to be reinstated, and

he left my care—there was not any trace of specific taint in connection with the case.

Case.

45. I saw a gentleman in the city, a few years since, who had been confined to his house for several weeks, and had undergone severe depletory discipline in consequence of having an attack of iritis ; the disease had, however, somewhat increased under such treatment. A similar plan to that adopted in the last case, completed the cure of the local disease in ten days ; but many weeks elapsed before his system recovered from the effects of the excessive depletion which had been employed before I saw him.

Case.

46. A woman, aged thirty, married, and the mother of four children, the youngest being eight years of age, came to the Ophthalmic Hospital, suffering from defect of vision, in consequence of inflammation which had principally affected the irides ; the attack commenced six months previously, after her having been the subject of rheumatism, for three weeks ; the rheumatic affection, as she termed it, was experienced in the head and extremities, without at all interfering with the joints. The disease in the eye commenced with slight pain, and intolerance of light ; and, after two or three days, the pain became more severe, was much aggravated at night, and extended to the temple and fore-

head ; at the same time several muscæ appeared, and the vision soon became further obscured, by a network or gauze, the density of which augmented so as to destroy all useful vision. For this she was directed to apply blisters, to refrain from animal food, and all stimuli, and to take frequent doses of aperient medicine. The symptoms, notwithstanding increased, and an extensive scaly eruption appeared on the skin, with a slight soreness of the throat : she still also experienced pains in the head and in the extremities. The previous treatment was continued, the hair was cut very short, and a lotion applied to the head ; she took also some slightly bitter medicine. On her application at the institution she appeared very feeble and depressed ; the skin of the face and neck was still covered with a scaly eruption, and much discolored ; slight inflammation existed in both eyes ;—the vessels of the conjunctiva and sclerotic being partially distended with red blood ; the irides were dull and slightly discolored ; the pupils were irregular ; the margins of the irides being in part adherent to the anterior capsules of the lenses : considerable opacity affected the pupillary portion of the capsule of the left eye ; but that of the right was in great part clear, though she only possessed sufficient visual power, to guide herself with difficulty. The cranial and other

pains, the character of the eruption, and the affection of the throat, satisfied me that she was the subject of syphilitic taint; but I could not elicit any thing satisfactory as to the origin of such taint. The disease of the eyes had, no doubt, arisen from the same cause; and had commenced in the irides, from whence it had extended to the choroid, sclerotic, &c. The antiphlogistic treatment, to which she had been submitted, had checked the acute symptoms; but had failed to arrest the morbid action, which had continued for more than six months, whilst pursuing such treatment, and had occasioned the serious mischief I have described.

I placed this patient under mild mercurial treatment, with a sustaining diet, and tonics, from which her general health was gradually reinstated; and she recovered good vision, sufficient for all ordinary purposes.

Case.

47. A young man, between twenty and thirty years of age, of delicate habit and scrofulous diathesis, was brought to the Ophthalmic Hospital, having nearly lost the vision of both eyes from iritis, and its consequences;—the attack had commenced in the right eye with the ordinary symptoms of iritis; and he had immediately sought the advice of an oculist of celebrity, who treated him by the repeated abstraction of blood by leeches and the cupping-glass, by blisters, by

purgatives, and kept him on a very poor diet; and this plan was persevered in, although the disease in the eye first affected increased, and the left became diseased: the progress of the morbid action was slow, but it continued gradually to extend; and at the expiration of three months from the commencement of the attack, the vision had become so far disturbed, that he could scarcely see to guide himself; the little vision he possessed was with the left eye, the right being perfectly dark, and the globe soft from extension of disease to the deeper textures, and disorganization; in this state I first saw him. On examining the eyes, I found the irides dull and of a green color, the pupils small, irregular, and fixed, from adhesions of the pupillary margins to the anterior capsules of the lenses, the right pupil was occupied by opake capsule or opake fibrinous deposit; and in the left there existed a partial opacity of similar character, an extensive but well marked and dark red zone was formed around each cornea, by sclerotic vessels distended with red blood; he suffered from a dull aching pain which was aggravated at night, and in a bright light he could discern, several black spots, which appeared to float before the eye; his general health was very much impaired, the pulse was feeble, the countenance pallid, and the extremities cold: so

depressed was he, that I did not like to begin, even with minute doses of mercury, till I had improved his general power. I therefore directed him to take a generous diet, but to augment it gradually, his bowels were to be regulated by pills of colocynth and henbane ; I further prescribed small doses of sulphate of iron with sulphate of quinine, every six hours : after a few days, his general power being improved, I gave him, in addition, one grain doses of the mercury with chalk, at night, and after a short period, twice a day. Improvement took place under this plan as fast as I could expect ; the health increased ; he lost the distressing feeling of depression, and the local disease took a favorable change ; for the vascular zone diminished in extent, and in depth of color, and the irides lost much of their dull appearance ; the perception of light with the left eye was more vivid, but he could not discern objects better ; this was to be accounted for by the opake matter, which occupied the greater part of the pupil.

Whilst making this favorable and satisfactory progress, he was tempted to leave my care by a medical man, who promised him speedy and certain relief, by a new remedy. I consequently lost sight of him for a time.

About two months afterwards, I was requested to see him again, in the neighbourhood of Lam-

beth ; and found him again excessively reduced in general health ; and the local disease so much worse, that hardly perception of light remained ; and this had again been produced by imprudent treatment. The remedy which had been employed, was turpentine ; and so unguardedly had it been administred, that it had occasioned severe strangury : yet in spite of this, it had been persevered in, until the renal and vesical pains became excessive, and he voided scarcely any thing but blood from the bladder : his sufferings were mitigated, for a time, by alkalis and narcotics, but in spite of all we could do, a most melancholy termination occurred ; organic renal disease took place, and was productive of so much intense suffering, that mental derangement ensued, and the poor fellow sunk under protracted, but most severe disease.

The case, however, affords satisfactory evidence of the inefficiency of depletory treatment for the cure of iritis, and of its mischievous effects in excess ; further, of the benefit of small doses of mercury, and of promoting and maintaining general power, in such cases connected with debility ; as well as the danger of using powerful medicines, without care and attention.

48. A man, near fifty years of age, thin, and case. having an appearance which indicated great want of general power, applied at the Ophthal-

mic Hospital, having nearly lost the vision of his right eye: on examining the organ, I discovered more extensive mischief to the iris, without other important disease, than I had before seen: this structure was altogether so changed in appearance, that it could scarcely be recognised, even in part; the greater portion of the surface was covered with tubercles in different stages; some small and yellow colored, others large and of a reddish brown hue; and a few, two or three, had suppurated and discharged pus into the anterior chamber, producing onyx: the pupil was very small and irregular and nearly filled by an opake deposit, the margin of the iris being extensively adherent to the anterior capsule of the crystalline lens. There existed a regular deep red zone around the cornea, resulting from sclerotic vessels filled with red blood, and a few conjunctival vessels also carrying colored blood presented themselves: he had a dull aching pain in the eye which was increased at night. Besides the ocular disease, he had the face disfigured by small ill formed tubercles of syphilitic character, and these extended over other parts of the skin; he complained, also, of some soreness of the throat, in which I found the mucous membrane of the pharynx and fauces thickened, but not ulcerated; the pulse was small and very feeble, the extremities felt cold, and he complained of

great depression of spirits and loss of muscular power. I admitted the patient into the hospital, and ordered him a good diet, with animal food and porter ; I prescribed first a mild aperient, and afterwards one-twentieth of a grain of bichloride of mercury, in a large wine glass full of the compound decoction of sarsaparilla, thrice a day ; some blue ointment and opium to be rubbed on the forehead and temple every evening, and belladonna to be applied night and morning to the eyebrow. This treatment produced the most beneficial effects ; for in three days we had decided evidence of the local disease being checked : as his general health improved, the dose of the mercurial was gradually increased ; so that in about a fortnight from the beginning of the treatment, he was taking one-eighth, instead of one-twentieth, of a grain of the bichloride at a dose ; in this time, however, a very considerable change had taken place in the local disease, and in the condition of the general power, and the evidences of syphilitic taint had become greatly mitigated ; as regarded the ophthalmic affection, he had lost all pain, the redness had nearly disappeared, the pus had become absorbed, and the tubercles of fibrin were nearly removed : the perception of light, which had been previously very indistinct, had now become distinct, and he could discern large objects. In

consequence, however, of the gums becoming spongy and tender, the dose of the mercurial was diminished, though not laid aside ;—being continued in such quantity, as further promoted the cure, as far as it could be accomplished, in a period of six weeks.

The vision was so far restored, that the patient could see to read a large print with the right eye, but the pupil remained irregular, and in part occupied by opake matter : the greater part of the iris had resumed its natural aspect, color, and brilliancy ; but in two or three places, corresponding to the situations of the tubercles which had suppurated, irregular depressions existed, part of the substance of the iris having been destroyed by ulceration ;—all symptoms of secondary syphilitic disease had subsided during the first month of the treatment, and he left the hospital, looking and feeling well in health and strength.

The steady progress of this case to a cure, and the rapidity of the recovery, were, no doubt, greatly promoted by the care, attention, and regularity, the patient was submitted to in the hospital.

On my first examination of the case, I had explained to the pupils my conviction of its being a pure case of iritis ; and that it would be relieved by the careful use of mercury ; but that

constitutional circumstances forbade the exhibition of this remedy, except with extreme care ; for if it aggravated the constitutional disturbance, or increased the general depression, it would act prejudicially on the local disease: my object was to improve and maintain the general power, and, at the same time to employ the mercurial in such quantity as I hoped might influence the local disease, without risk of further derangement of the system. The success of the treatment, especially as regarded the period in which the cure was effected, much exceeded my expectations; for I had expressed my belief that it might require, probably, double the period, which it really did, to accomplish all that I expected might be done.

My experience, then, in the treatment of iritis, warrants me in strongly recommending mercury, as the remedy principally to be relied upon, for its cure ;—it is from hundreds of cases that I have drawn my conclusions. I have, however, introduced some of the foregoing cases, not so much from their interest, as to shew that the influential remedy requires, in many instances, very careful management to effect the desired end ; if used without discrimination, it often does and will fail to produce relief, and may cause aggravation of the local disease ; because it creates or maintains a condition of system, under which a healthy local reparative action cannot go on. It

is always necessary to ascertain the state of general power, and the condition of the most important functions, before commencing the use of mercury, and to regulate the dose according to the degree of power, &c.

I have frequently seen the disease aggravated by mercurial treatment, adopted and carried on in extreme, in spite of the general disturbance it has created; and, besides, I have witnessed the origin of iritis at a time when the system has been freely under the influence of mercury, but morbidly affected by it: such facts have been adduced as proofs of the inadequacy and injurious effects of the mercury; whereas, they should be adduced as proofs of the carelessness or ignorance of those, who undertake the management of the remedy, without knowing its powers or understanding its uses.

Consequences. The most common consequence of iritis, is the formation of permanent adhesions, between the pupillary margin of the membrane, and the anterior capsule of the crystalline lens; by which the motions of the iris are much restricted; and, occasionally, the capsule of the lens is rendered so opake as to impede the vision materially: sometimes, such impediment is trifling; at other times, so great as to destroy useful visual power.

Occasionally, morbid action extends to other textures of the eye from the iris, to the choroid

especially, and thence to the retina; and entire disorganization now and then ensues, producing a permanent organic amaurosis.

Have been indicated in the previous obser- Combinations.
vations.

OF CHRONIC IRITIS.

Symptoms. AN impaired state of vision, frequently accompanied with the presence of dark muscæ.

Appearances. At first, there exists only a dull condition of the iris, and a sluggishness in its movements ; if it be naturally of a light color, (particularly blue or grey,) a slight change in color is perceptible ;—when further advanced, the pupil becomes contracted, and its margin thickened, and adherent to the anterior capsule of the crystalline lens by one or more points, or entirely : the pupil is then irregular and the iris motionless ; and, often, there is a partial or complete opacity of the portion of capsule occupying the pupil, from alterations in its texture, or deposition of opake matter on its surface.

Causes. The disease sometimes commences in this chronic form, from the same causes as produce the acute stage ; but, very frequently, it is induced by reducing the acute disease by anti-phlogistic means, without the aid of mercury : the redness

and pain being relieved, and the vision in a degree improved, the patients are considered as cured; whilst this insidious, but destructive stage, still exists, and goes on to occasion the mischief which I have described.

Before adhesions have taken place between ^{Treatment.} the iris and capsule of the lens, mild mercurial treatment speedily effects a cure: but it is generally necessary, to carry the use of this remedy so far, as to affect the system slightly: much smaller doses of the medicine are required than in ordinary cases of acute disease; and it is often necessary to give, at the same time, some tonic,—more especially if the patient has previously suffered from an acute form of the disease for which he has been much depleted.

When the pupil is irregular, from adhesions of its margin to the capsule of the lens, without opacity of that part of the capsule which occupies the pupil, the same plan of treatment should be adopted; and, in addition, the belladonna should be constantly applied to the eyebrow, in order to assist in the liberation of the iris from the capsule of the lens, as the mercurial action causes absorption of the fibrin. Even in cases of some years standing, I have known such adhesions give way, to the combined influence of mercury and belladonna. Generally, however,

when the disease has existed some months, the adhesions are seldom entirely got rid of; but the further progress of the disease is arrested, and the vision materially improved, by the treatment recommended.

In the more advanced stage of the disease, when the pupil is occupied by opake capsule or fibrin, the degree of recovery is extremely doubtful; it depends on the condition of the opake matter, whether it be perfectly organized or not, which we can only imperfectly determine by examination; but which may be in some measure judged of by the previous duration of the affection; as the longer it has existed, the more probability there is of the matter being more freely organized. When there is not evidence of other disease in the organ, I should, even at this advanced stage, give a full trial to the mercurial plan of treatment; for, although the recovery of useful vision is very uncertain, yet, extension of disease to more important textures is prevented, and the organ brought to a condition in which any operation for drilling, or for the formation of artificial pupil, at a subsequent period, would be performed with better prospect of success.

In all these cases the progress of recovery is slow, and a continuance of treatment for many

weeks is often necessary to produce the full benefit.

Extension of disease to the choroid and to ^{Consequences.} the capsule of the crystalline lens. *See Choroiditis.*

OF IRRITIS FROM INJURY.

Synonyme. **TRAUMATIC iritis.**

This is always of the acute kind, and attended with the same symptoms and appearances as arise in the other forms of the disease, with the addition of some evidence of injury or pressure on the affected membrane.

Causes. Wounds from foreign bodies penetrating the cornea or sclerotic coats, by accident ; or design, as in operation : the pressure of a displaced lens, or a fragment of the lens, more particularly on the anterior surface of the iris ; or of any extraneous matter, as stone, iron, &c.

Treatment. If the inflammation result from bruise or wound simply, it may be relieved by mercurial treatment, as already described ; but when the body, producing the injury, remains in contact with the iris, the influence of medicine can be but little relied on, unless the irritant be removed, or become encased in fibrin. The plan of treatment should then be determined by the following circumstances.

1. The size of the body.
2. The nature of the substance.
3. The position of it.

If the substance be very small, although of ^{size.} such a nature as not to be acted upon by the aqueous humor, it should be allowed to remain, unless its removal can be very readily effected. The inflammation may be prevented from producing destructive effects, by the combined influence of mercury and depletion, until the foreign particle has become surrounded by a cyst of fibrin, which prevents it from creating further mischief. I have known a small particle of granite, and in two instances minute portions of copper cap, thus encysted. Any portion of matter of such size as would require many days for its solution, (supposing it be capable of solution,) should be extracted, unless in such a situation, as to render the operation impossible without destruction of the organ, which is hardly probable.

In case of the lodgement of an extraneous ^{Nature.} body, not easily acted upon by the aqueous humor of such a size, and in such a situation, as to render its becoming encysted very improbable, the removal by operation should be immediately effected, although at some risk to the organ ; but if of a composition which will be quickly dissolved by the aqueous fluid, and in

such a position as to induce much risk in its extraction, it should be allowed to remain.

Although during the presence of an extraneous body, mercury does not annihilate the iritic inflammation, still it materially retards its destructive effects, and should always be employed, in connection with other means, for subduing inflammatory action. The application of the extract of belladonna should also be directed.

Case.

49. A singular case of formation of cyst, in connection with the anterior surface of the iris, occurred in a boy, sent to the Ophthalmic Hospital, some time since. (*See plate 3, fig. 6.*) The boy had been an apprentice to a blacksmith, and during his work, a small particle of hot iron penetrated his cornea, and lodged in the iris; this gave rise to severe inflammation, which was with difficulty subdued; but he recovered after several weeks, with good vision, but a slightly disfigured pupil. Some months afterwards, a small cyst was formed in connection with the injured part of the iris, and it continued gradually to increase without suffering or inconvenience, until it acquired the size of a small pea; it was attached near to the pupillary margin of the membrane and projected into the anterior chamber; it was of nearly a round figure, and the surface was shining and white, like a delicate tendinous structure. The boy was sent up to the London

Ophthalmic Hospital, and fell under the care of my colleague, Mr. Scott, who removed the cyst ; but I believe that the patient did not retain useful vision afterwards.

I have since seen a somewhat similar case, which has altogether presented so many circumstances connected with our present subject, that I shall briefly relate it.

50. A fair and beautiful girl, about nine years case. of age, was brought to me for my opinion respecting a tumor connected with the iris of the right eye : it was about the size of a small pea, glistening like tendon, of rounded figure, and attached near the margin of the pupil on the anterior surface of the membrane ; it had been observed for several months, and had increased very gradually : the iris was otherwise healthy, and the vision good ; but the motions of the pupil were somewhat interfered with. The decided, though very gradual, increase of the cyst, induced me to recommend its removal, being satisfied, that if it acquired much greater bulk, it would, by pressure, induce inflammatory action, and probably destroy the organ for visual purposes. Other opinions were taken, and my advice was for the time negatived.

A few months after, that which I anticipated occurred ; the tumor gradually increased in size, and its pressure gave rise to inflammation, af-

fecting the iris principally ; but, also, the aqueous membrane slightly. She was then again brought to me, and I was requested to remove it ; which I did with little difficulty, by making a small section, at the lower part of the cornea, near to the site of the morbid growth, and drawing out the cyst and part of the iris to which it was attached, by means of a small blunt hook ; and then cutting off a portion of the iris and the cyst with a pair of fine scissors ; I left, consequently, an enlarged and disfigured, but clear pupil : no untoward symptoms occurred for the first three days, during which period the wound on the cornea closed, and the vision remained good ; but a slight degree of inflammatory action still continued.

My patient was then imprudently taken out in an open carriage, and allowed to stand some time at an open window, the weather being cool ; and, in consequence, active inflammation sprung up in the iris. I immediately commenced with mercurial treatment, very carefully, because my patient was delicate and easily depressed ; and I allowed her a good plain diet. The inflammation of the iris continued for a time, gradually, to increase, and the sclerotic and aqueous membrane became much affected : I tried, in consequence, to augment the mercurial treatment ; but was repeatedly obliged to lessen the quantity, as

it invariably produced restlessness and depression, if given in any other than very small doses ; (two grains of mercury with chalk;) but, at the same time, ten grains of strong mercurial ointment were rubbed into the temple, each night : before, however, I could get sufficient influence from the medicine to check the disease in the right eye, the left had become slightly, but similarly affected, exhibiting inflammation of the iris and aqueous membrane. Many weeks had elapsed, and the morbid action had slowly advanced ; yet I adhered to the plan of treatment by small doses of mercury, and mercurial friction to the temples ; being convinced that I was pursuing the course most likely to effect a favorable change : at length, my perseverance was rewarded ; for some days I could not perceive any change in the appearance of the eyes ; the disease seemed at a stand still—it was checked ; but the redness soon diminished, the irides began to lose their dulness and discoloration, and the patient was able to bear a greater degree of light : thus the cure commenced, but it did not proceed steadily ; for it was several times interrupted by slight relapses ; and these arose a few times from too rapid a withdrawal of the mercurial remedy, which I was anxious to diminish the use of as far as possible ; though it had never produced more than a slight tenderness of the gums:

however, the principle I began with I continued to act upon until the cure was complete, as far as regarded the annihilation of all morbid action, and the left eye had perfectly recovered ; in the right the pupil had become very much contracted, and the iris had formed firm adhesions to the anterior capsule of the lens, which are likely to be permanent : she has, however, perception of large objects with this eye.

The disease, or cyst, which existed, when I first saw the patient, was supposed to have arisen from injury, the eye had been struck by some bearded corn, and had been much inflamed in consequence : the inflammation had, however, yielded to the ordinary remedies ; and it was a few months afterwards that the morbid growth from the iris was first discovered.

Traumatic iritis is usually more difficult to subdue, than that arising from simple or specific causes ; and, in this case, a delicate constitution, and strumous tendency, favored the propagation of the disease ; and, at the same time, forbade a free use of the most powerful remedy. I feel confident that both the eyes would have been lost, but for the steady perseverance in mercurial treatment ; for as soon as the remedy began to produce a decided effect on the system, the local disease was arrested ; and so long as such an effect was kept up, the ocular

affection continued to subside ; but whenever the influence of the mercury was lessened, up to a certain period, the iritis invariably increased. Depletion would, I believe, have hastened a most unfavorable termination; for several times relapse occurred in consequence of depressing causes, principally slight diarrhœa ; and I was obliged to maintain power, by a generous diet, and occasionally by small quantity of stimulus, and tonic medicine : by strict attention to this point the general health and strength did not suffer from the treatment and confinement, which occupied, altogether, more than twelve months. I think it probable, that in this case, the ill consequences might not have occurred, had the operation been done, when I first proposed it ; before any inflammatory action had commenced in the iris.

OF TREMULOUS IRIS.

Definition.

A FLACCID condition of the membrane, which allows of a kind of tremulous motion in it, when the aqueous fluid is agitated by any sudden motion of the globe.

This state of the iris appears to be the result of a partial or complete paralysis of its muscular fibres. Most frequently the pupil is rather larger than natural, but does not alter on the admission, or interception of light; though, in a very few instances, I have seen a slight degree of motion take place, so as to affect the size of the pupil a little, under such circumstances.

I have most commonly seen it, as a consequence of severe contusion of the globe, which has, at the same time, affected the function of the retina, and produced amaurosis. I have also known it to occur after the operations for cataract, by extraction, or solution, or depression; and have, occasionally, found it to exist, when no injury has been inflicted upon the organ. The fact of there being very little or no motive

power in the iris, in all cases which have come under my observation, has led me to adopt the opinion which I have expressed: and I do not know of any other theories on the subject, which appear to me more satisfactory. I should add, further, that the tremulous motion is always greater when the iris does not expand or contract, so as to change the diameter of the pupil, than when a slight power of contraction and dilatation remains.

I have never known this condition recovered from.

OF COMPOUND INFLAMMATION OF THE
SUPERFICIAL OCULAR TUNICS.

WE frequently find inflammation attack two tunics simultaneously, or extend so rapidly from one tunic to another, that a compound disease is produced; presenting mixed symptoms and appearances, which much increase the difficulty of diagnosis.

There are two of these compound diseases which are common, and which require special consideration.

First,—inflammation of the conjunctiva and sclerotic; or, conjunctivo-scleritis.

Secondly,—inflammation of the sclerotic and iris; or, sclero-iritis.

OF THE INFLAMMATION OF THE CONJUNCTIVA AND SCLEROTIC.

INFLAMMATION, affecting both the conjunctiva Definition. and the sclerotic, simultaneously.

Conjunctivo - scleritis, catarrho - rheumatic Synonyms. ophthalmia.

This compound disease exhibits the characters, Symptoms. which indicate affection of the two membranes conjointly. The patient usually complains of heat, and increased lachrymation ; the secretion being hot or scalding, and frequently falling over the lower eyelid and the cheek. There is, also, a very frequent or constant sensation, as if some grit or extraneous matter were lodged beneath the eyelid. There is stiffness and feeling of weight in the eyelids ; and they are generally agglutinated, during sleep, by a viscid secretion, which lodges and coagulates on the cilia, and at the canthi. Further, the vision is somewhat impaired, and luminous objects seem to possess a colored halo.

In some few instances, the inflammation of the conjunctiva is of the simple kind, when it does not present the pink color, but approaches to that of vermillion. There is then, also, little comparative morbid action in the palpebral division of the membrane, and little or none of the viscid secretion of which I have spoken. The vision is not at all disturbed, unless the iris and choroid become affected, and the patient is free from the ordinary general symptoms of catarrh. At the same time, however, the patient experiences a dull aching pain in the globe, which extends to the brow, temple, or cheek, and sometimes over the side of the head. The globe itself is tender to the touch, and feels as if it had been bruised. Most of these symptoms are increased towards night, or early in the morning: they are augmented under a continuance of the disease; and the vision then becomes more disturbed, by extension of morbid action to deeper textures.

Appearances.

Usually, in this combined affection, the conjunctivitis is of catarrhal character; so that the palpebræ are somewhat swollen and red at their free margins, and some coagulated secretion may be seen upon the cilia and at the inner canthus. Both the ocular and palpebral divisions of the membrane, (except the corneal portion,) have their vessels freely injected with red blood. In

the former, they may be seen forming a beautiful network; and in the latter, they are not so distinct, but the membrane is more thickened, more uniformly red, and its villi are very apparent. Their color inclines usually to a pink or carmine tinge; but, altogether, they are of darker color than in the simple catarrhal disease. Occasionally there is slight chemosis of the ocular part of the membrane.

On close inspection, the vessels of the sclerotic may be also seen passing beneath those of the conjunctiva, having straight courses, radiating from the margin of the cornea towards the orbit; whilst the conjunctival vessels are very tortuous, and form frequent anastomoses. The color of the sclerotic vessels is of a dull red, very different from those of the conjunctiva.

If the vision be but little impaired, the cornea, the iris, and other textures present their natural aspects; but if the vision be gauzy or misty, the iris will be found dull and turbid, and perhaps slightly altered in color, shewing that it participates in the diseased action. Under these circumstances, the pupil is usually somewhat contracted. It is very rare to find mischief to the cornea by ulceration or sloughing.

I have seldom seen this disease without some Constitutional decided constitutional derangement. There is, sympotms. generally, complaint of head-ache, restlessness,

and heat, with a clammy state of mouth, a loaded tongue, and thirst, with indifferent condition of appetite. The bowels are often constipated, and the secretion of urine is generally scanty, and the fluid itself high colored, and depositing a brightish pink or red sediment. It sometimes, also, produces a slight sensation of scalding as it is discharged from the urethra. There is also some general febrile excitement towards night, when many of these symptoms are much increased.

It is well worthy of remark, that the catarrho-rheumatic disease is very seldom found in those, who have the condition of circulation and nervous energy equal to their figure and age; but that it generally attacks those, who have these functions below par, so that the pulse is most frequently very compressible, and usually feeble in its beat; and there is a depression of mental and bodily power, which evinces a want of nervous energy.

Causes.

The predisposing cause is the rheumatic diathesis; for very rarely does the disease appear, unless the patient have previously experienced, or evince, at the time, rheumatic affection of some other part or parts. Thus, the patients frequently complain of pains about the shoulders, or arms, or loins, at the time that the ocular disease exists.

The more direct causes are the influences of cold and damp air, or of irregular diet, which give rise to much gastric disturbance. The affection is most prevalent during the spring and autumn, when catarrhal and rheumatic affections prevail: and I can recollect two occasions, in which the disease appeared to be epidemic, many cases presenting themselves to me in a very short period; at which time, also, the simple affections of the conjunctiva and sclerotic abounded. Some of the most obstinate forms of this disease, which I have witnessed, have been connected with the constitutional taint, which has originated in gonorrhœa.

This disease is seldom seen in persons under the age of puberty, and rarely attacks those who have much constitutional vigor.

Little need be said under this head, as I have previously expressed the principal circumstances which influence the disease, and which are, in fact, all that modify the simple ophthalmic diseases.

First,—it is essential to ascertain the extent of the disease, and to learn whether it affects only the conjunctiva and sclerotic, or extends to the deeper and more delicate textures, as the iris and choroid. Supposing it to be confined to the conjunctiva and sclerotic, the first object should be to correct any error which may exist in the

function of an important organ or organs. I have observed that the tongue is usually loaded, the appetite indifferent, and the bowels confined, and that there is a scanty and turbid secretion of urine. I find it necessary at first, therefore, generally to prescribe an active aperient, as a full dose of colomel and colocynth, or a few grains of mercury, followed up after three or four hours by a common black draught; and having obtained free discharge from the bowels, further to promote a proper condition of the secretions, by small doses of mercury and some simple saline medicine. But, as there is an augmentation of local suffering towards and during the night, it is frequently advantageous to combine the mercurial given at night with some narcotic, as Dover's powder, the preparations of morphine, or such other form as may be deemed advisable; but always to take care to obtain relief from the bowels, on the following morning, by some saline aperient.

During the continuance of this part of the treatment, the diet should consist, principally, of light farinaceous matter with milk, and the patient may be allowed to drink freely of whey, barley water, or soda water; and wine may be taken with the latter, or with gruel or arrow root, if the patient become low or feeble: but it is well, if possible, to avoid the use of stimulus,

until the tongue has become clean, and the secretion from the bowels tolerably healthy.

During the use of these medicines, the local disease may be arrested and mitigated ; first, perhaps, by the application of a few leeches to the lower eyelid, and subsequent fomentation to encourage the bleeding for a time ; or by the application of a blister behind the ear, or to the nape of the neck. The counter-irritation is generally better than the local bleeding, as it affords more decided and continued relief.

If there be not any thick or viscid secretion from the eye, I prefer the application of dry warmth, either by portions of new flannel heated on a warming pan, or by small flannel bags partly filled with chamomile flowers, and heated in the same manner. Such application may be used as frequently as the patient desires.

When there is much viscid or thick secretion, an astringent application becomes necessary ; and I think a weak solution of alum, with a small quantity of the wine of opium, is the best form : but, in some instances, the solution of nitrate of silver, not exceeding one grain to the ounce of distilled water, acts more beneficially than the alum. A drop or two may be placed upon the conjunctiva once or twice in the day, or the solutions may be applied as lotions, for a minute at a time, being warmed before used.

The repetition of such applications should be determined by the quality and quantity of the secretions, but they should be used as sparingly as possible ; for I find that all moist applications are somewhat prejudicial during the continuance of sclerotic inflammation. If it be necessary to employ astringent lotions, it will also be necessary to use some simple unguent to the edges of the eyelids, and to the lashes, during the night, to prevent firm and troublesome agglutination of these parts.

The first symptom of amendment, is, usually, a diminution of the vascularity of the conjunctiva, and a cessation of the thick opake secretion. The eye still appears red, but the redness is of a dull aspect, and results from the vessels of the sclerotic distended by red blood ; which, as the conjunctivitis subsides, become more apparent. The color is, under these circumstances, a dull red.

In order, further, to subdue the inflammatory disease in the sclerotic, an alteration of treatment is required ; but proper care must be taken, to ascertain that the general secretions are well performed, before such change be adopted ; or it may rather aggravate than mitigate the disease. The change in treatment should consist in the administration of some light tonic, with an alkali, as soda and bark, or sarsaparilla, or

gentian with lime water. The doses of these remedies should be small and frequently repeated ; at the same time the patient should be allowed a more generous, but still plain, diet, with a very moderate quantity of any stimulus, to which he may have been previously accustomed. He should be forbid such exercise as might produce fatigue, and directed to keep himself warmly clothed, and protected from any sudden or great change of temperature. Such a plan of treatment seldom fails to produce the desired effect, in the course of eight or ten days ; whilst under the anti-phlogistic plan of treatment, the disease is generally protracted and obstinate.

There are other remedies, which I have found serviceable in the cure of this disease, such as quinine, colchicum, turpentine, &c.

The first of these I have frequently given, in small doses, combined with an additional quantity of sulphuric acid, with good effect. I have found it more particularly serviceable, when the conjunctivitis has been in a great measure subdued, and little more than scleritis has remained ; but, when the patient has experienced inordinate cutaneous action, in addition to the ordinary symptoms of feeble power, so that he has been either bathed in perspiration at night, or sweated profusely under the slightest exertion,

I have then preferred this remedy to the small doses of bark and soda.

Colchicum is so uncertain a remedy, that I rarely employ it. I have, however, occasionally known it to afford relief most rapidly ; but, I have often used it, without its producing the slightest benefit, as regards the local affection. From the experience I have had respecting it, I should say that it rarely, if ever, does good, when any functional disorder of stomach or bowels exists ; or when the index to these parts, namely, the tongue, is at all loaded or foul ; but that when the tongue is clean, and the secretions from the alimentary canal are proper, it will sometimes effect a cure more rapidly than any other remedy I know of. I use it occasionally in the following way. I first act freely upon the bowels by some drastic purge, combined with mercury ; and soon after, I direct the patient to take half a drachm of the wine of the colchicum seed, combined with a small quantity of alkali, and some narcotic ; and to repeat the dose every six hours. I take care to see the patient after the second or third dose, in order to determine upon the continuance of the remedy ; for if it produce nausea, or affect the bowels, it seldom acts beneficially on the ocular disease ; but if relief be obtained from the first two or three doses, a cure

is usually promoted by perseverance in this treatment. When I prescribe the colchicum, it is usually in the early stage of the disease; not at the period at which I have recommended the use of soda and bark, or quinine; but whilst the conjunctival affection, as well as that of the sclerotic, exists.

Turpentine is also a very uncertain remedy. I have tried it, as I have done colchicum, in both stages of the disease, but have found it of little efficacy,—so much so, indeed, that I now rarely prescribe it. I have known it occasionally serviceable in the second stage of the affection, or when the conjunctivitis has been subdued; but I much prefer the small doses of bark and soda, or of quinine, to it, as more certain and safe remedies; whereas, the turpentine is liable to produce severe and continued distress.

In describing the causes of conjunctivo-scleritis, I have mentioned that I have sometimes known it to arise from gonorrhœal taint; and it has in some of these cases appeared to be metastatic, and several of such cases have proved exceedingly obstinate. As good illustrations of the subject, I shall give a case or two.

51. I was consulted by a gentleman, about Case. forty-six years of age, whom I found to be suffering from inflammation, affecting the conjunctiva and sclerotic, of both eyes; and, in one, the

affection had extended to the iris and choroid, producing discolouration and dulness in the former, whilst the vision was disturbed, and muscae were present, indicative of the latter. He suffered also from affection of some of the large joints; as both knees, one of the ankles, and one of the wrists. He had been under treatment for two or three days, and had applied leeches to the eyelids, and had taken some active aperients, and adopted a very abstemious plan of diet. On examining the affected joints, I found them generally painful, tender, and swollen, but without discolouration, and the enlargement evidently resulted from an increased secretion of synovial fluid. I had so frequently seen similar affections of the joints, connected with gonorrhœa, that I was led to make enquiries in this respect, and elicited that there was still a slight urethral discharge; but that it had been more copious, and had been attended with some acute symptom, as ardor urinæ, &c., previous to the developement of the articular and ocular affections. Finding the general power to be tolerably good, and the principal functions performed with regularity, the tongue being clean, the appetite good, and bowels regular, but rather severe local suffering both in the joints and eyes, I suggested the employment of colchicum in the way I have described, allowing, at the same time, a nutritious

diet. I was induced to recommend the colchicum, from having found it of much service, in articular affections, under similar circumstances. The patient, however, objected so decidedly to this remedy, that I was obliged to use stratagem to get him to take it. Knowing the chemist who prepared medicine for himself and family, I wrote a prescription merely for the alkali and narcotic; and afterwards called upon the chemist, and requested him to put half a drachm of the wine of colchicum seed to each draught, which was directed to be repeated every six hours. Besides this, I also prescribed two grains of calomel to be taken at bed time, some belladonna to be applied to the eyebrows night and morning, and a weak solution of alum to be used tepid to the eyes three or four times a day. The calomel and belladonna were ordered in consequence of the iritic affection, and the lotion to check the muco-purulent secretion from the conjunctiva. I saw the patient again after he had taken three of these draughts. He had passed a tranquil night, and had enjoyed several hours' refreshing sleep. The ocular and articular pains had subsided; the inflammatory affection in the eyes had, in great measure, disappeared: and the synovial secretion in the affected joints was much lessened. He was, in fact, in a convalescent state; and a continuation of the treatment

effected the cure in little more than seven days. Being on terms of friendship with this gentleman, I was occasionally in the habit of seeing him ; and finding that he remained well for more than twelve months, after his recovery from this attack, I foolishly told him how I had deceived him with respect to the employment of colchicum ; for, within a few months afterwards, I was called to see him with a similar affection. He had been in the country, and had exposed himself for several hours, to cold and damp, so as to get his clothing saturated with moisture. He awoke the following night feverish and restless, with uneasiness and a tingling sensation in the urethra, from which a thin yellow discharge escaped, and the passage of the urine created a sense of scalding. One of the knees felt stiff, and the eyelids of both eyes were slightly agglutinated by a viscid secretion. On the former attack, he thought that the urethral disease had arisen without probability of taint ; but I was not perfectly satisfied on this point. On this second attack, however, his account was so clear and satisfactory, that I could not do otherwise than allow that the disease was spontaneous. Early in the morning, after the commencement of the second attack, he took some aperient, refrained from all stimulating food, and used a weak astringent lotion to the eyes ; but within

forty-eight hours the ocular and articular affections had so much increased, that he immediately posted up to town, and sent for me to see him. I found the attack to be quite of a similar character to the former, and confined principally to the eyes and joints; for, the urethral symptoms had nearly disappeared, as the other affections had become developed. I could not again induce him to take colchicum; and, very probably, had he done so, knowingly, mental influence would have prevented its beneficial operation. I was obliged, therefore, to resort to the plan of treatment which I have detailed as generally serviceable in such cases, and succeeded in a few days in subduing the severity of the symptoms; but did not get rid of the ocular disease for several weeks, and the articular affections proved much more obstinate; for the disease did not confine itself to the joints, in which it was first evident, but it attacked several others; and it was months before he got rid of inflammation in the synovial membranes; and, even then, he remained crippled from imperfect use of some of the principal articulations. He has since experienced two slight attacks of a similar character, which were readily subdued by the ordinary treatment; and he now seems free from a tendency to relapse, as several years have transpired without any fresh symptoms of similar disease;

and he has enjoyed a good state of general health, and has gradually, and almost entirely got rid of the articular stiffness.

52. During the last year, a young man about twenty years of age, of fair complexion and scrofulous diathesis, presented himself at the Ophthalmic Hospital, suffering from inflammation of the conjunctiva and sclerotic of both eyes, and walking lame in consequence of inflammation of the synovial capsule of the knee, which I found to be swollen, tender, and fully distended with synovial secretion. I directed the attention of the pupils to this case, as being probably connected with gonorrhœal taint; and upon examination of the penis, this opinion was confirmed, as a gleety discharge was, at the time, escaping from the meatus. He stated that he had been the subject of an acute attack of gonorrhœa several weeks previously, and that he had taken a variety of remedies to get rid of the affection. They consisted principally of purgatives of saline quality, and copaiba, and cubebs; and during that period he had lived temperately, and refrained from stimulating drink. The treatment had succeeded in subduing the acute symptoms, but not in stopping the morbid secretion. It had lost its thick and yellow character, and become thin and white; though, occasionally, after exercise or excitement, it resumed the original

character, and he experienced slight sense of scalding in the urethra when he passed his urine. He was emaciated, pallid, and depressed, and the circulation was very feeble. He suffered a good deal from circum-orbital pains, connected with inflammation of the sclerotic coat. I directed him to take a more generous diet, with a small quantity of porter, which had been his usual stimulus ; but to refrain from all acids and spirits. I prescribed ten grains of Dover's powder, with two grains of mercury with chalk, at bed time, and a portion of blue ointment with opium to be rubbed on the forehead before going to bed. He was to regulate the bowels, by small doses of Epsom salts in infusion of roses. The eyes were to be cleansed, three or four times a day, with a weak solution of alum in poppy decoction, which was to be used warm ; and some spermaceti ointment was to be applied to the eyelashes and lids at night, to prevent troublesome agglutination. Two days afterwards I saw him again, and found improvement in his general power, and mitigation of the ocular affection. The conjunctivitis had almost disappeared ; there being scarcely any viscid secretion. The sclerotic still exhibited marks of inflammatory action in it ; but the suffering was trifling, and he had experienced but little of the nocturnal circum-orbital pains since he had taken the remedies I had pre-

scribed. I now left off the use of the mercurial ointment, and lessened the night-dose of Dover's powder, and mercury one half; but gave him, in addition, the small doses of soda and bark every six hours. Within ten days from the time of his application at the hospital, he was perfectly relieved, not only from his ocular and articular diseases, but he also lost all symptoms of urethral complaint.

Cases.

53. In the present year I have had two cases of similar character in the venereal wards of St. Thomas's Hospital. One of these yielded rapidly, as the foregoing case, and to similar treatment. In the other case, which was in a man of about thirty years of age, the disease extended to the iris and choroid of one eye; so much so, indeed, as to render rather active mercurial treatment necessary: but, at the same time, his power was supported by good diet; and, as soon as the iritic inflammation was checked, the tonic treatment, by bark and soda, was commenced. Relapse, however, occurred, I believe, from imprudent exposure; and I was obliged, a second time, to resort to the use of mercury, to check the iritis; and, subsequently, with more care he recovered by return to a tonic remedy, which consisted of small doses of iodine, hydriodate of potash, and sarsaparilla. The urethral disease did not entirely subside, in either of these cases, until two or

three weeks after the ocular disease had been perfectly subdued ; but I did not find it necessary to resort to copaiba, or any other specific remedy ; for I found the disease of the urethra gradually subdued, as the general health improved ; and, eventually, a cure was effected in this respect without further aid than a continuance of the mild tonic remedy.

54. I was called, some time ago, to see a case. gentleman who was suffering from this disease. It was the third attack that he had experienced. Each had been preceded by gonorrhœal affection of a trifling nature ; that is, without any acute symptoms. The ocular disease had, in each instance, followed the urethral affection in a few days ; and had evidently, from his description, attacked the conjunctiva and sclerotic : for he first experienced a sense of stiffness in the eyelids, with a feeling of grit beneath the palpebræ, and a thickish secretion which agglutinated the eyelashes during sleep. At the same time the globe of the eye was tender to the touch, and he felt a dull aching pain in it, which extended to the brow and cheek, and was aggravated at night ; but his vision did not become affected, till after two or three days had elapsed. For the two first attacks, he had been treated, in the outset, by local abstraction of blood, by purgatives, by abstemious diet, and by mercury. In each instance

the disease was protracted, and the recovery tedious, and effected eventually by the use of sarsaparilla, with a generous diet, and change of air. When I was called to see him, in the third attack, I found him greatly depressed and debilitated by loss of blood, by low diet, and by mercurial influence, which was at the time fully established—his gums being swollen and tender, and the discharge of saliva copious. On examining his eyes, I found inflammation of the conjunctiva and sclerotic in each, with a dull condition of the iris in one, and an irregular pupil from adhesion of the iris to the anterior capsule of the lens. The vision, in this eye, was imperfect, and he complained of a few dark muscæ. This state of vision, with the appearance of muscæ, had, however, existed, he told me, ever since the second attack of the disease. I immediately stopped the use of mercury, and directed a better and more nutritious diet, and prescribed only the small doses of soda and bark, with an occasional mild aperient; and directed a weak astringent lotion, with some simple ointment to the eyes.

This treatment sufficed to remove the affections of the sclerotic and conjunctiva, and to improve his general health materially. He then left town to complete the restoration of his health; having still, however, a little gleety dis-

charge from the urethra ; and this continued when his health was apparently re-established. I gave him small doses of the muriated tincture of iron, which soon relieved him. He has since had three or four attacks of inflammation of the conjunctiva and sclerotic ; and, with one exception, has been speedily relieved ; by first acting upon the secretions of the alimentary canal, and then giving him small doses of bark and soda ; and, at the same time, confining him to a simple but nutritious diet. On one occasion, I did not see him till the disease had existed four or five days ; and I then found so much iritic inflammation, as to oblige me to give a few doses of mercurial ; but soon as the iritis was subdued, I immediately commenced with a treatment similar to that which I have just mentioned, and with perfect success.

When I first saw this gentleman, I was satisfied, from symptoms he detailed to me, that he had some permanent thickening in the urethra, causing a degree of stricture. This, no doubt, rendered him extremely susceptible to gonorrhœal affection. Indeed, I believe that the excitement of sexual intercourse was almost sufficient to induce a return of discharge from the urethra ; as he said that he rarely had intercourse of the kind, without experiencing some return of this morbid secretion. He had not

suffered from the disease of the synovial membrane, as in some of the other cases ; but, he had always had rheumatic pains about his shoulders, arms, and neck, when the ocular disease was developed.

Consequences. What is most to be feared, under a continuance of this disease, is, extension of mischief to the iris, and the choroid, or even to the deeper textures of the eye ; so as to produce organic amaurosis. Such result I have known in several instances, when the affection has not been properly recognized, and therefore improperly treated. *See Sclero-iritis.*

OF INFLAMMATION OF THE SCLEROTIC
AND IRIS.

INFLAMMATORY action attacking the sclerotic Definition. and iris simultaneously.

Sclero-iritis, rheumatic-iritis, arthritic-iritis. Synonyms.

First,—there is usually a sense of fulness, and Symptoms. a tenderness of the eye-ball, with a dull aching pain, which becomes more aggravated towards night, and extends to the eyebrow, temple, or cheek, and sometimes over the entire side of the cranium ; and, during the attacks of pain, the part affected is tender to the touch, sometimes excessively so. In a short time, often in a few hours, the vision becomes disturbed ; and it seems to the patient as if a veil or gauze were before the eye ; at this time there is also a sense of fulness of the globe : and, in addition, the patient often perceives black or grey muscæ moving in the field of vision. The ocular and circum-orbital pains augment, in most instances gradually, but in some rapidly ; and in propor-

This does sometimes exist ; but, like another symptom, which I have mentioned, (namely, intolerance of light,) it is frequently wanting, and it exists also, occasionally, in the pure forms of iritic inflammation, uncombined with arthritic, and rheumatic diathesis, or with choroiditis or aquo-capsulitis. It is sometimes complete, so as to appear around the entire circumference of the cornea ; and it is sometimes incomplete, forming crescentic lines, usually on the temporal and nasal sides of the cornea ; and now and then, but very rarely, above and below the edge of the transparent texture. It results from the mode of junction between the cornea and sclerotic ; usually, the anterior margin of the latter overlaps the circumference of the former, and equally so at all parts. The extent of this overlapping, however, varies very much in different individuals ; but when it is very great, and the subject becomes attacked by sclero-iritis, by iritis, or choroiditis, which extends to the sclerotic, this grey or ash-colored line becomes apparent ; for the extreme anterior termination of the sclerotic is, under such circumstances, supplied, as the cornea is, by vessels from its conjunctival covering, and not by vessels proper to the sclerotic ; so that it remains uninjected or free from red blood, whilst the surrounding portion of the sclerotic assumes the red tint from injection of its vessels ;

and thus an opaque greyish line is left between the cornea and the injected part of the sclerotic. The proper sclerotic vessels anastomose freely with those of the iris, &c.; whilst those of the cornea, and (under the circumstances mentioned,) those supplying the anterior termination of the sclerotic, have very trifling communication with the vessels of the iris or sclerotic; which accounts for this portion of the tunic remaining uninjected, or free from redness, during the existence of scleritis or iritis. It sometimes happens, that the anterior margin of the sclerotic does not overlap the corneal circumference equally; and the most frequent variation in this respect is, that the overlapping exists to a greater extent, towards the nasal and temporal sides of the cornea, being little above and below; but now and then the contrary position is found, namely, that the overlapping of the sclerotic is considerably above and below the cornea, and comparatively trifling at the sides. From the explanation I have given of the occasional appearance of the entire grey line around the cornea in scleritis and iritis, it must be obvious that such line would be incomplete or partial, when the irregularities which I have described, exist in the junction of the cornea and sclerotic; and that when the overlapping of the sclerotic is greatest at the inner and outer margins of the

cornea, the ash-colored line would exist only in such positions, when it would assume a crescentic figure on either side, gradually disappearing above and below: and, on the other hand, if the overlapping of the sclerotic should be greatest above and below, the crescentic grey lines would be apparent in such positions, and wanting at the sides of the cornea. Such, indeed, is the fact; and I have repeatedly pointed out and explained these circumstances to the pupils at the Ophthalmic Hospital.

Constitutional symptoms.

Selero-iritis is always, I believe, connected with constitutional derangement; and, generally, the rheumatic diathesis is well marked, in those subject to this disease, the ocular affection being preceded or accompanied by other local evidences of rheumatism: usually, considerable important functional derangement exists—the tongue being loaded, the mouth clammy, the appetite indifferent, sometimes with nausea, and the bowels constipated, the skin dry and hot, especially towards evening; and the secretion of urine scanty and high colored, and becoming turbid on cooling; febrile symptoms occur about or soon after sunset; and, at the same time, local suffering becomes much augmented; but remission takes place towards morning. The pulse is commonly feeble and very compressible during the day, but becomes quickened and sharp at night;

being still, however, compressible: and, in persons of very low power, profuse perspiration now and then takes place towards morning.

Predisposing causes are, errors in diet, which occasion gastric derangement; also taint of syphilitic character. The immediate and exciting causes are, mostly, exposure to cold and damp, or imprudent exertion of the organ, on minute objects, particularly by lamp or candle light.

The disease is confined to persons of adult age, and occurs more frequently in the young than in the elderly subject.

Sclero-iritis is generally attended with disorder of some principal functions; and the first effort in treatment, should be to remedy such disorder; as the medicines proper to subdue the local disease cannot be beneficially employed whilst important functional derangement exists. If the bowels be constipated, and the tongue white, but not loaded, without loss of appetite, a dose of drastic purgative with mercury, as calomel and colocynth, will probably be serviceable; but if the tongue be loaded, and the appetite indifferent, with nausea, a dose of calomel, followed in a few hours by a black draught, will be more efficacious. Most frequently there is a confined state of bowels, a foul tongue, a hot skin, and a scanty secretion of urine, with much restlessness. In such cases, I have found the greatest benefit

result from a grain or two of calomel, with eight or ten of Dover's powder at night, and some mild saline aperient the following day ; repeated so as to keep the bowels free and promote renal and cutaneous action. It is impossible, however, to describe the varieties which are found in functional disturbance. I must be satisfied, therefore, with stating that it is of the greatest importance to correct such disturbance before beginning with specific treatment ; but that the medical man must decide upon the form of purgative, or the use of diuretics, or diaphoretics, &c. ; and in doing this, he must be attentive to the general power of the patient, and be careful not to exhaust it, either by too active purgatives, or by promoting excess of cutaneous secretion. With care, a day or two will suffice to arrest functional derangement, sufficiently to enable the surgeon to exhibit the general remedies particularly calculated to arrest and subdue the ophthalmic affection.

From the commencement, however, local means may be employed to influence the disease of the eye, and these must be regulated according to the severity or mildness of the attack. Should the iris be much affected, its color altered, and its pupil irregular, in addition to circum-orbital pains of remittent or intermittent character, belladonna should be applied morning

and evening to the brow ; and the blue ointment with opium should be rubbed freely on the forehead above the eyebrow, at night, or night and morning, for fifteen or twenty minutes : but suppose, in addition, a sense of fulness of the globe of the eye, and a considerable degree of conjunctivitis, then a few leeches applied to the eyelids, or a large blister placed at the nape of the neck, will be requisite, and, in some severe cases, both may be employed with advantage. Very seldom is it necessary to use the cupping-glass, or to resort to general bleeding ; for, as I have mentioned, the disease seldom attacks robust or powerful persons. As local applications, simple tepid water occasionally, or dry warmth with heated flannel, or bags of chamomile flowers, alone should be allowed.

Should the principal secretions be in tolerable order at first, or when they are rendered so by medical or dietetic treatment, the influential remedies should be immediately given. When the iris is much affected, being discolored and partially adherent to the capsule of the crystalline lens, mercury is necessary ; and more peculiarly so, when the vision is disturbed by numerous muscæ, or by a gauze or mist, which indicate extension of the disease to the choroid coat. The mercury should be combined with some

narcotic, to prevent its acting upon the bowels, as well as to mitigate the local suffering.

When the patient does not suffer from heated skin, any of the ordinary forms of opium may be given; but when, as frequently happens, the skin is dry and hot, Dover's powder in small doses, with the mercurial, is most serviceable. The extent and frequency of the dose of mercury and narcotic combined, must be regulated by the power of the patient, and the activity and extent of the local disease. The dose should be as small as can be prudently given, so as to occasion as little general depression or disturbance as possible.

When the constitutional power is tolerably good, the patient should be kept upon a moderate but nutritious diet, without stimulus. When general depression is evident, some ordinary stimulus may be allowed with the principal meal; and should the patient evince great feebleness, some general medicinal tonic should be prescribed in addition to the good diet and allowance of stimulus.

During the administration of mercury, the patient must be narrowly watched, that this remedy may be moderated or withdrawn, should it create general depression, or as soon as it has subdued the iritic inflammation; for it will not

act beneficially, even on the inflammation of the iris, if it cause great diminution of the general power; and it is useless, as a remedy, when the inflammation of this texture is subdued; indeed, the continuance of its influence beyond this point is prejudicial, and retards the cure of the case, as it will not remove the scleritis.

Should the affection of the iris be slight at first, or supposing it to be subdued by the plan I have proposed, attention should be directly given to the inflammation of the sclerotic, which may be remedied by bark and soda, quinine, sarsaparilla, or some tonic medicine.

In most cases, I prescribe small doses of bark and soda, five grains of each every four or six hours; but if there be excess of perspiration, or deficient appetite, I prefer the sulphate of quinine and dilute sulphuric acid, or the solution of yellow bark, with the dilute acid. At other times, if there be any evidence of venereal taint, I prescribe sarsaparilla, or small doses of iodine and hydriodate of potash with some bitter. Thus in the outset of the treatment, mercury, when required, must be given in form and dose appropriate to the power of the patient and extent of local disease; and in the after part of the treatment, the tonic remedy to be employed must be regulated by the degree of power and condition of the most important functions.

I have occasionally employed colchicum in the early stage of the disease with good effect, when the tongue has been clean and the bowels regular; but very seldom are the general secretions in such order, as, in my opinion, to admit of the use of this remedy, with fair chance of success. It is in these cases, also, that turpentine has sometimes proved serviceable; and from which it, as well as bark and soda, and other tonics, have obtained credit as remedies for iritis; over which they have little or no influence, but would, in most instances, act injuriously. In sclero-iritis the affection of the iris is usually secondary, consequent on, and, in some measure, depending upon the scleritis, and may sometimes be cured by subduing the scleritis or primary disease; but, in most cases, it would be extremely imprudent to trust to the subsidence of the iritis, and treat only the scleritis; for though the iritis is first promoted by extension of morbid action from the sclerotic, the inflammatory action is not controlled by the disease of the sclerotic; but once fairly set up it goes on independent, in a great measure, of the scleritis. Further, the disease of the iris soon extends to the choroid, and inflammatory action in these textures places the organ in great jeopardy, as regards vision; so much so, that it would be folly not to resort to a remedy, which is almost certain in its effects,

in checking the morbid action of the iris and choroid, if it be properly managed, and supposing the disease to be remediable.

Sometimes a slight degree of scleritis and conjunctivitis, not productive of suffering, resists the general treatment ; and, in such instances, I have seen much good effected by a drop or two of the wine of opium, used daily.

• The relation of a few cases will serve to illustrate the principle of treatment ; and, at the same time, to explain some of the circumstances which may call for a modification of the plan.

55. A man, aged thirty, applied at St. Thomas's ^{case.} Hospital, having his right eye much inflamed, and the vision disturbed. The iris was dull and discolored, and its pupillary margin rather irregular, from adhesion to the anterior capsule of the lens. The vessels of the sclerotic were extensively injected with red blood, forming an irregular zone around the cornea, the zone being of small extent to the inner and upper part of the cornea, but occupying all the visible portion of the sclerotic below and externally. The globe was tender ; and he suffered from pain in and around the orbit, and these pains were aggravated at night. His tongue was somewhat loaded, his bowels not in good order, and his appetite indifferent, and he was hot and restless at night. I ordered two grains of calomel with six of

Dover's powder every night, infusion of roses and Epsom salts occasionally, a large blister behind the ear, blue ointment and opium to the forehead every night, and belladonna to the eye-brow. Three days afterwards I saw him again, (he had been watched in the interval by one of my dressers,) and found him much improved, but the iritis not sufficiently subdued to allow me to prescribe tonics. The same plan was continued, with directions, that as soon as the iris became tolerably bright, five-grain doses of soda and bark should be given thrice a day, and that the mercury should be diminished. This change was made in a day or two, and at the expiration of a week from the beginning of the treatment, he was nearly well, very slight evidence of diseased action remaining, his sight being perfectly restored. At first he took, principally, light farinaceous diet with milk ; but when I saw him the second time, I told him to eat some meat and take a little porter.

Case.

56. Another man, nearly of the same age, and with precisely similar local disease, as to the most important points, came to the London Ophthalmic Hospital. I put him upon the same plan of treatment at first, and with like success ; but on the subsidence of the iritis, I prescribed quinine and acid instead of soda and bark, because the patient had too profuse an action of

the skin. Recovery took place with equal rapidity as in the former instance.

Both of these patients had suffered from rheumatism, and they were both rather below par in general power, when attacked by the ocular disease.

57. A stout and powerful man, aged forty-two, Case. a blacksmith, received an injury to the right eye, from a portion of iron, which produced acute inflammation. Two days after, he applied at the Ophthalmic Hospital. He was cupped on the temple ; purged freely by calomel and colocynth, directed to be very abstemious in his diet, and to apply a cold saturnine lotion to the eye. Four days afterwads I saw him, and found evidence of inflammation in the iris, the sclerotic, and conjunctiva, with a deep ulcer on the cornea, to its outer margin, at the point where the injury had been received. The eye was very irritable, and intolerant of light, and his vision dull. He suffered severely at night, from ocular and circum-orbital pain. The iris was so much discolored and dull, that I considered it necessary to give mercury rather freely, for fear of extension of mischief, in this important texture. I therefore prescribed two grains of calomel, with the third of a grain of opium, thrice a day ; and some belladonna to be applied to the eyebrow, night and morning, and a moderate diet, without sti-

muli. He experienced relief from this treatment for several days, especially as regarded the iritis, but seven days afterwards, he had an aggravation of pain, and an increase of ophthalmia. This resulted from exposure to cold and damp. On examining the eye attentively, I was struck with the appearance of the ulcer, which indicated deficiency of proper action; and further investigation, led me to detect a feeble state of circulation, and deficiency of general power, which his appearance would not have led me to suspect. I therefore directed the patient to take meat and porter, and a tonic of gentian with ammonia, diminishing the dose of calomel to one grain, to be taken only once a day. In consequence of the continuation of much circum-orbital pain at night, I prescribed, in addition, some blue ointment, with opium, to be rubbed on the forehead and temple at night. The improvement was more rapid after this change; the iritis and scleritis soon subsided, leaving a slight degree of ophthalmia with the ulcer in the cornea, in which a healthy action had commenced, but proceeded very tardily. After about ten days I gave him fifteen minimis of the solution of yellow bark, thrice a day, instead of the gentian, which promoted a more rapid action of a proper character, and he soon perfectly recovered.

It is very uncommon to find sclero-iritis exist-

ing, at the same time, with ulceration of the cornea ; which was, however, here explained by the traumatic origin of the latter. The case, when I first saw it, presented some difficulty as to treatment : for whilst the extent of the iritis called for the active employment of mercury, the condition of the ulcer indicated the necessity for tonic treatment. The general appearance of the patient, with the extent of local suffering, and the evidence of increased action in the conjunctiva and sclerotic, would, most probably, have induced many surgeons to have used more active depletory measures ; but the appearance of the ulcer alone, led me to the further investigation of the case, and the discovery of a deficiency of general power ; and, thereby, to the adoption of the tonic treatment. I believe that, in this case, the sclero-iritis resulted from the too free use of a cold application, the patient having a rheumatic diathesis, and being, at the same time, rather deficient in general power.

I have before observed, that the continued application of cold and moisture, frequently induces scleritis, when employed for the relief of simple ophthalmia ; of which I have seen many examples. The following has recently come under my observation.

58. A man, fifty years of age, received an ^{case.} injury to his right eye, from a portion of

hard stone, whilst occupied at his business as a mason. This was followed by a degree of inflammation which induced him to seek for medical aid. Depletry treatment was instituted, and he was directed to keep a rag, wetted with a cold lotion, constantly applied over the palpebræ and forehead. At first, this afforded him considerable relief, and he appeared to be recovering fast; but, suddenly, he experienced aggravation of pain of a more severe kind; not only in the eye, but also in the forehead, temple, and cheek: these pains were much augmented at night. After a few days, as his sufferings continued unabated, I was requested to see him, and found inflammation existing in the conjunctiva and sclerotic, with slight dulness of the iris, and a small transparent indentation in the cornea, which had been injured by the foreign body. The entire want of action, in the wounded part, evinced deficiency of power; which was corroborated by the state of circulation, and feeling of debility. But the redness of the eye, from the presence of red blood in the vessels of the conjunctiva and sclerotic, with the severe local suffering, might have induced a belief, that acute disease existed. I recommended a good diet, and a little gin and water, which was his usual stimulus; half a grain of hydrochlorate of morphia at night, and an application of blue

ointment with opium, by friction above the eye-brow, in the evening ; a simple saline aperient occasionally, and equal parts of carbonate of soda and bark, every six hours. After four days I visited the patient again, and had the gratification to find the eye free from redness, and recovered ; with the exception of a small opake spot on the cornea, in the site of the indentation I had before noticed. The indentation or ulcer was, indeed, nearly repaired ; the patient was free from pain, and much improved in general power and feeling. The cure was completed, in two or three days, by a continuance of the same means.

59. A gentleman, aged twenty-four, came to Case. me from the country ; and presented me with a written opinion, respecting a disease in his right eye. The opinion expressed, that the disease had been, and was iritis ; and further, that mercurial treatment would be necessary to subdue it. The history, from the patient, was, that the eye had become blood-shot and painful ; tender, as if it had been bruised ; and that the pains were most severe at night, and extended to his brow and cheek ; and that, soon after this, his vision had become disturbed, with muscæ and cloudiness.

I found the iris rather dull, and with trifling irregularity of pupil, from adhesion of the mar-

gin of the iris to the capsule of the lens ; and an irregular dull red zone in the sclerotic around the cornea. He was pale, and had a very irritable, but feeble pulse ; and he was under the influence of mercury, but not severely so. He had been many weeks under treatment by the gentleman who had given him the written opinion, and had at first mended rapidly ; but, after a few days, he experienced little benefit, and suffered from frequent relapses ; which had been treated principally by local bleeding, and continuance of mercury. I gave him a good nutritious diet, and a moderate quantity of beer ; five grains of bark and soda every four hours ; belladonna, in solution, to the eye ; and desired him to protect himself from cold and damp, and not to use his eyes for minute purposes. His recovery was rapid, and without check. In about three weeks, he returned to the country, with his eye free from morbid action, and his general health much improved. A single point of attachment remained between the iris and capsule of the lens.

This gentleman has a decided rheumatic dia-thesis. He has since had three attacks of disease in his eyes ; which have readily yielded to the treatment of regulating the secretions, and giving three or four doses of mercurial, and then some mild tonic. Only once have I had occa-

sion to continue the mercury beyond three days, and the cure has been effected in eight or ten days ; except in the last attack, which was rather more severe, and which detained him from business nearly four weeks.

60. The father of this gentleman also has ^{case.} had, for the first time, an attack of sclero-iritis, during the present year, quite of a similar character to that affecting the son ; and it has been removed by similar treatment.

I have attended some patients, subject to this disease, who had suffered from several attacks, previously to their coming under my care ; and, from the statements of some of them, it appeared that the disease had been viewed, as one originating in and dependent upon the syphilitic taint ; and, under this supposition, they had been treated most severely with mercurial remedies. The attacks had invariably been of long duration, and productive of much suffering ; and the treatment had left the patients much weakened in general power ; and, in most of them, with some defect of vision.

61. A gentleman, about forty years of age, ^{case.} who had been thus treated for three or four attacks, occurring within a few months of each other, seldom remaining free from the affection for above six or seven months at a time ; and who had been confined by each attack for not

less than three months, and who had, consequently, suffered much in his general health, came under my care accidentally, in consequence of the illness or absence of the gentleman whom he had previously consulted. The attack, for which I was called to see him, had existed for about a month ; and he was still laboring from symptoms of acute local affection. The scleritis was extensive, the iris rather dull and discolored, and the pupil irregular, from adhesion of its pupillary margin to part of the capsule of the crystalline lens. The field of vision was gauzy, and occupied, in part, by dark muscæ. The globe was excessively tender, and he experienced severe nocturnal pains in the globe, and upon the brow and temple. He was pallid, his extremities cold, and the circulation very languid. He had been treated by local bleeding, blistering, purgatives, abstinence, and a free use of mercury ; of the influence of which, the condition of his gums and tongue gave conclusive evidence. I considered it necessary, immediately to discontinue the use of the mercurial ; which had produced sufficient constitutional action to prevent any extension of the inflammation of the iris or choroid ; and appeared to be keeping up a state of depression and general irritability, unfavorable to the cure of the inflammation of the sclerotic. In order to remove

this condition of system, I directed him to take a more generous diet; and a small quantity of sherry wine, which was the stimulus to which he was most accustomed; and, besides, some simple medicine to regulate the bowels: I prescribed sarsaparilla with lime water and a small quantity of ammonia, with a view of aiding in the restoration of the general power, and relieving the scleratitis. He continued the application of the belladonna to the eyebrow, as it had previously been used; and, otherwise, employed, locally, only tepid water. For the first few nights, I also gave him about ten or twenty minimis of the sedative solution of opium, to mitigate the nocturnal pains; but, after four or five days, I was enabled to lay aside the use of the narcotic. He improved gradually, but satisfactorily, under this plan, soon losing all his suffering; but the organ remaining weak, so that I could not allow him to exercise it in matters of business; and this weakness appeared to depend upon the condition of his general power; for as the latter improved, the former lessened. At the expiration of about a month from my first visit to him, he went out of town; and, after an absence of a fortnight, he returned to his business. He expressed himself much pleased with the result of my treatment; observing, that he had suffered much less than in his previous attacks, and that

he had more quickly recovered from the effects of the treatment.

Since that time, he has had five or six more attacks of sclero-iritis; but has never been confined more than two weeks during the cure of any one of these; and the treatment has been such as I have previously explained—the correction of error in the secretions, a few doses of the mercurial, and then the use of tonics. At different times he has taken sarsaparilla, bark and soda, quinine, cusparia, and ammonia; according to the conditions of the principal secretions, and the state of the stomach. The intervals, between the attacks, have lengthened very much; and it is now two years and a half, since he last suffered from ophthalmic disease.

Case.

62. A medical man, about thirty-six years of age, engaged a good deal in public professional duty, being physician to one of the large metropolitan dispensaries, had suffered from two attacks of this complaint, and had been treated principally by mercurial agents—his medical friends considering the ocular disease to be connected with constitutional taint. He had recovered from these, after several months of suffering; and, on each occasion, had been obliged to quit town for several weeks, after the acute symptoms had subsided, in order to reinstate his general health.

He had been fully and freely mercurialized, to the production of profuse salivation, and had subsequently taken large quantities of sarsaparilla. In the commencement of the third attack, a mutual medical friend advised him to see me; and on my visiting him, I found that he had a very severe attack of sclero-iritis in his left eye, and that the disease had extended to the choroid, so that he could merely perceive light from darkness, but could not discern even large objects. The iris was dull and discolored, the pupil very contracted and irregular, the entire visible portion of the sclerotic discolored, by injection of its vessels with red blood. There was great tenderness of the globe, and severe circum-orbital pains aggravated at night; his constitutional power was considerably below par; he had taken the usual remedies to produce moderate action from the bowels, so that the tongue was clean, and the appetite moderately good. As the disease had existed for only two or three days, I thought it probable that it might be cut short by the influence of colchicum, more especially as he evinced a decided rheumatic diathesis. I recommended him, therefore, to take half a drachm of the wine of the seed of colchicum, with ten drops of the sedative solution of opium, and a few grains of soda in some camphor mixture, every six hours;

and, at the same time, to rub some blue ointment and opium above the brow and on the temple, night and morning ; to apply some belladonna to the brow at the same periods ; and to take a light, plain, nutritious diet. Our remedy, however, failed ; and, instead of mitigating the disease, rather increased it ; principally, I consider, from its producing a good deal of gastric disturbance. He, therefore, discontinued it, and took an active dose of senna and sulphate of magnesia to relieve the disturbance in the alimentary canal, which the colchicum had occasioned ; and, after this, I advised him to take small doses of mercury with chalk, with Dover's powder, and to continue the use of the blue ointment and the belladonna, with the simple nutritious diet. He, further, at his own wish, applied a few leeches to the temple. After taking about seven or eight doses of the mercurial, his gums became slightly swollen and tender ; but he felt depressed, and restless, and irritable. Still, however, he had a better perception of light, and the iris had regained much of its natural color and brilliancy. The use of mercury, therefore, was moderated, his diet was improved, and he took sarsaparilla with lime water. The progress of the cure soon became more rapid, so that in about a week from his commencing the use of the tonic, he had lost

all local pains ; and his vision was so far restored, that he could see objects of moderate size with tolerable accuracy.

Unfortunately, he imprudently exposed himself to cold and damp wind ; and, in a few hours afterwards, he experienced a return of the ocular and circum-orbital pains ; and his vision again became obscured by a dense cloud. I was obliged, in consequence of this relapse, again to resort to the mercurial for a few doses, and to discontinue all stimulus ; but, a day or two brought us back nearly to the condition we had arrived at, previously to the imprudent exposure. Then, again, the mercurial was abandoned, and the tonic treatment adopted ; which, with slight modification, effected a cure in little more than three weeks ; his vision being so far restored, as to enable him to read small print ; but he was troubled with the appearance of one or two dark muscæ, which have since remained. The modification in treatment consisted, principally, in substituting soda and bark in small doses, for sarsaparilla. The internal use of mercury was discontinued gradually ; and the external application of it was left off, as soon as the circum-orbital pains had entirely subsided. He has since had a slight attack of the same disease, which yielded in a few days to two doses of calomel, with a small quantity of Dover's

powder, taken on subsequent nights, and followed by a mild alkaline aperient in the morning ; and afterwards by the exhibition of bark and soda.

I think, the relation of further cases would be superfluous ; inasmuch, as they could add but little, to the explanation of the principles, on which this disease should be treated. Not many years since, cases of this kind were among those, which were found most difficult to cure, and which were invariably of a protracted nature ; but, at that time, the true character of the affection was not understood ; but it was considered to be iritis of specific character. In consequence, however, of its resisting the remedy, which we found to be so constantly successful, in the treatment of the ordinary forms of iritis, I was led to give particular attention to it, and have now stated the result of my enquiries and investigations respecting it. I feel satisfied, that I have pointed out the true character of the disease ; and think, that I may adduce, as proof of this, the invariable success which attends the treatment, conducted upon the simple principles which I have already stated.

Consequences. This disease, under neglect or mal-treatment, produces capsular cataract, by extension of disease from the iris to the capsule of the lens, by means of deposit, which takes place from the former and connects it to the latter, and this

deposit becoming organized, forms a medium of vascular communication ; by which, disease is propagated from one texture to the other. Very frequently, we find patients who have suffered from sclero-iritis, with some irregularity of the pupil, and slight partial opacity of the capsule of the lens ; and, occasionally, we see them with the whole of the pupillary margin of the iris adherent, and the pupil occupied by a dense opake membrane ; which is either the capsule thickened by inflammatory action, or a deposit of opake fibrin upon it. Sometimes, the disease extends from the iris to the choroid, and the latter taking on inflammatory action, becomes partially or entirely thickened ; probably by deposit of fibrin, undergoing a change similar to that which we can trace in the iris, and which, by its pressure upon the delicate retina within, destroys vision ; or, in extreme cases, the disease may be propagated, further, to the retina, and thence to the vitreous body, so as to cause disorganization of those important parts ; which extension of disease would be indicated by symptoms, which will be explained when describing retinitis.

IN order to prevent a great inequality in the size of the volumes, I place the description of the diseases of the ocular appendages at the end of this ; in preference to dividing the subject of AMAUROSIS, which I must have done had I followed the arrangement I originally intended. To separate this subject, however, as much as possible, from that which precedes it in this volume, I have affixed *letters*, instead of *numbers*, to the cases.

OF DISEASES
OF
THE PALPEBRAE.

INFLAMMATION OF THE PALPEBRAE.

INFLAMMATION of the superficial structures of the eyelids, (the integument and cellular tissue,) presents the same symptoms, and leads to the same terminations, as when occurring in similar structures upon other parts of the body.

I only deem it necessary to make a few remarks respecting the suppurative termination, or the formation of abscess ; as much mischief may ensue, if a proper mode of treatment be not adopted.

This stage of inflammation is marked by a Local symptoms. throbbing and lancinating pain in the affected part, and by an alteration in the color and aspect of the surface ; the color becomes deeper, the swelling more prominent and pointed, and it

is shining or glossy ; the central portion of the tumor has an elastic feel, whilst the surrounding parts are somewhat cedematous.

Constitutional symptoms.

There is frequently general sympathetic fever, accompanied by rigors which more decidedly mark the occurrence of suppuration.

Causes.

The most common cause of such disease is external injury. I have seen it often, also, as a consequence of erysipelas ; and, in children of weak constitutional power and scrofulous habit, it occurs without any apparent reason.

Abscess over the lachrymal sac.

It is not uncommon, in such children, to see a small circumscribed abscess immediately over the lachrymal sac, which, from its appearance and the symptoms it gives rise to, might be readily mistaken for disease of the sac itself ; for the swelling, either by its pressure on the sac, or by displacing the inferior punctum lachrymale, and interrupting the course of the secretions to the nose, occasions an epiphora ; and the nostril of the same side appears dry. Independent of diseases in the lachrymal passages being rare in children, the following circumstances will generally explain the true nature of the complaint : the rapidity with which the swelling forms, and its not being preceded by any watering of the eye or epiphora ; the early discoloration of the surface of the swelling, and its not having the decided circumscribed and hard feel which abscess

of the sac presents ; the pain also is very trifling, in comparison with that which accompanies suppurative inflammation in the sac itself.

Abscess of the palpebræ occurs at all periods of life ; but is much more frequent in young, ^{Persons liable to.} than in elderly persons.

The principal point to be attended to, in the ^{Treatment.} treatment, is the early evacuation of the matter. The suppurative process always occasions destruction of cellular membrane, and this structure is essentially necessary to the free and perfect motions of the palpebræ ; its abundance and laxity, in this situation, admit of rapid extension of abscess, when once formed ; whilst the integument and muscular layer resist the progress of the matter to the surface ; so that if the disease be left to the natural process, a very large portion of cellular tissue may be destroyed, before the matter escapes by an ulcerated opening.

In such cases, the consequence will be, either that the motion of the lid must be afterwards greatly impeded, or that from contraction, when the healing process has been completed, the lid may be everted or distorted, so as to lose its perfect adaptation to the surface of the globe ; the effects of which I shall hereafter describe.

An opening should, therefore, be made with a lancet or small scalpel, as soon as any evidence of suppuration exists : the incision should be

made free, and corresponding to the transverse diameter of the palpebra, as the consequent cicatrix will then be hardly perceptible, appearing like one of the ordinary transverse folds of the skin.

If the abscess point at the upper and outer part of the superior palpebra, the surgeon must be careful not to pass the lancet very deep, as he may wound some of the ducts passing from the lachrymal gland, which I have known to occasion a troublesome fistulous sore. This has occurred, I imagine, from the anxiety of the surgeon to avoid the globe. Caution is also necessary, in those cases in which the abscess is seated immediately over the lachrymal sac; and for the same reason.

The after treatment should be the same as in cases of simple abscess of any other part.

OF CHRONIC ABSCESS OF THE PALPEBRAE.

SUPPURATION occasionally takes place in the cellular structure of the palpebrae, unattended with the usual marked signs first described; but which may prove equally injurious to the functions of the part.

In most of these cases the patient experiences Symptoms. a dull pain which is increased by firm pressure ; this symptom is, however, but trifling : the lid is much tumefied and oedematous, and the surface of a purple hue ; the skin does not appear tense or shining ; the part feels very like a portion of an anasarcaous extremity, when the cellular membrane is not fully distended ; possessing, however, more elasticity about the centre or most elevated part.

It depends on a feeble state of the system. Cause.

I have, most frequently, seen such cases in persons recovering from severe attacks of erysipelas ; occasionally, in those debilitated by syphilitic disease ; or by extensive use of mercury, or by fever ; I have, also, known chronic abscesses to form after injury, when the constitutional powers have been naturally feeble, or rendered so by previous disease, or age.

Such disease occurs at all periods of life, Persons liable to. though more frequently after, than before, the adult age.

Besides the evacuation of the matter by a free Treatment. incision, as in the acute cases, general remedies must be resorted to, or the reparative process will not proceed favorably ; and the wound made for the escape of the pus, is apt to extend by ulceration. In the majority of cases, an improved diet, and attention to the important secretions,

will be found sufficient; otherwise, the use of bark, quinine, or the mineral acids, will be required, with some slight local stimulus, if the healing process do not proceed favorably.

When combined with any specific disorder, as syphilis, the general treatment must be modified accordingly.

OF EXTRAVASATION OF BLOOD INTO THE
CELLULAR TISSUE OF THE PALPEBRA.

ECCHYMOSIS palpebrarum.

Synonyme.

Independent of those attributable to any inflammatory action, there exists merely a sensation of fulness and stiffness, which prevents the free motion of the part.

A degree of tumefaction, in some cases considerable, when inflammation is also induced ; at first, a livid condition of the surface ; and, subsequently, either a uniform or partial dark purple or nearly black tint, with a surrounding yellowish or greenish margin.

The extravasation is most frequently induced by violence, as accidental or designed blows : it is also taking place, occasionally, in persons suffering from severe cough, or in other diseases of the respiratory organs, inducing sudden and violent action of the respiratory muscles.

Although an affection of trifling import, it is usually one of considerable annoyance to the

patient, unless very young ; as it is generally considered a mark of a quarrelsome disposition ; and often excites remarks which few can with patience submit to. It is fortunate, therefore, that we can, by local treatment, rapidly get rid of this affection.

When induced by external force, for the first few hours, cold should be applied ; and if the tumefaction become considerable with symptoms of inflammatory action, local bleeding should be also resorted to. As soon as the symptoms of inflammation have subsided, a poultice, composed of the root of the black bryony, finely scraped, after being deprived of its external bark, and mixed with crumb of bread or flour, so as to form it of a proper consistence, should be laid over the discolored part, enclosed in a thin muslin bag ; a fresh application should be made every six or eight hours, until the absorption of the effused blood be completed : this will usually take place in forty-eight hours, or a little more, even when the ecchymosis is considerable. I became acquainted with this remedy, from noticing that some of our celebrated pugilists appeared, a few days after severe encounters, without any disfigurement from ecchymosis ; and, on enquiring the reason of this, I found they employed the bryony root, in the manner I have described, to remove such evidence of their occupation.

When the bryony root cannot be procured, the absorption may be accelerated by the use of most of the ordinary stimuli, employed in the form of poultice, as oatmeal and vinegar; muriate of ammonia in solution, mixed with bread or linseed; stale beer-grounds, &c. I have not tried the hydriodate of potash, but should think it likely to be of much service.

OF ENTROPIUM.

Definition and **INVERSION** of the eyelid or lids; from *en*, in, Derivation. and *trepo*, to turn.

Local symptoms. A constant state of irritation, as if from the presence of an extraneous body, is the first and most marked symptom of this disease: the pain is of a sharp pricking or darting kind, especially experienced on moving the globe; this is accompanied by a very troublesome degree of lachrymation: the vision is so far impeded, that the patient is incapable of directing it to any useful purpose; and he cannot bear exposure to bright light.

Appearances. The free margin of one or both of the eyelids is turned upon the surface of the globe, so that the cilia are in immediate contact with the ocular conjunctiva. (See plate 7, fig. 6.) The secretions, which are in excess, are constantly flowing over the lower lid; and the vessels of the conjunctiva are many of them injected with red blood. The degree of ophthalmia, however,

depends much upon the duration of the complaint ; and, in cases of long continuance, that portion of the membrane which covers the cornea participates in the disease ; the brilliancy of the surface is lost ; the transparency diminished from a deposition of fibrin, creating nebula ; and, sometimes, the vessels containing red blood extend in numbers over the cornea—being continued from those of the conjunctiva investing the sclerotic : occasionally, ulcers are formed ; these extend, in most instances, superficially ; but I have known them to penetrate the whole texture of the cornea, so as to open the anterior chamber.

On an accurate examination, the entropium causes. will be found to depend on one of the following causes.

First, and most frequently, there is an ex- Lax integument. tremely lax state of the tegumentary covering of the lid, except immediately over the ciliary border of the tarsus ; in consequence of this, the larger part of the orbicularis muscle loses its power of supporting the proper situation of the lid ; and when, from mere accidental circumstance, inversion takes place, the influence of the muscle is not sufficient to counteract it ; but the application of force is necessary to remedy the evil. Every fresh recurrence of the entropium

creates a greater tendency to its return ; and, eventually, it becomes permanent.

Partial thickening of conjunctiva.

Secondly,—sometimes, besides a lax condition of the skin, the conjunctiva, at the point of reflexion from the lid to the globe, is much thickened, so as to separate the orbital portion of the lid from the globe ; and, consequently, to tilt inwards the free margin : thus a tendency to inversion is created by the tumid membrane within ; whilst a loose state of the integument without, does not allow of a proper influence from the orbicularis muscle ; a sudden motion of the lid, or the application of slight external force, therefore, readily produces complete inversion, which may be at first easily remedied ; as by drawing outwards the ciliary margin of the lid, or by simple pressure on the integument. Inversion, again, soon occurs, as the tendency to it still exists ; but it may still be relieved by the same means ; gradually, the frequency of the entropium increases ; and, at last, although it can still be relieved by the means I have described, yet the return of the complaint is so rapid, that the patient is hardly ever free from suffering.

I have known frequent instances, in which entropium has been produced solely by the partial thickening of the conjunctiva, in the

situation above mentioned, without any unusual laxity of the palpebral integument ; but such cases are rare, in comparison with the former. This form usually exists in the inferior palpebra, rarely in the superior.

Thirdly,—a contraction sometimes occurs in the free margin of the palpebra, preventing its proper adaptation to the more prominent part of the globe, and causing it, (supposing the disease to occur in the inferior palpebra,) to sink below its ordinary level ; whilst in this state, its margin may be caught by any sudden downward motion of the globe, and forced inwards upon it ; as in the former case, the evil may be for a time remedied by external pressure ; but a frequent repetition of the accident, at length, leads to a permanent state of inversion. This form occurs in both palpebræ ; and, usually, in persons who have been subject to strumous ophthalmia, during the existence of which the contraction of the tarsus occurs, and the constant forcible closure of the eyelids, voluntary or spasmodic, consequent upon the intolerance of light, tends to create an inversion of the palpebra.

Fourthly,—when ulceration takes place upon the inner surface of the lid, and extends to the tarsus ; or when a portion of this texture is destroyed, together with its conjunctival covering, by the application of an escharotic ; or when it

is much injured by a wound ; a state of contraction occurs during the healing process, or subsequent to it, which sometimes causes entropium ; this form, therefore, results from a morbid curvature of the tarsus ; and both palpebrae are equally liable to it.

Persons
liable to.

The first form that I have described seldom occurs unless in persons advanced in life : the second form is met with in aged persons, and is frequent in those of middle age ; and the third and fourth forms occur at all periods of life.

Treatment.

When the disease exists in connection with a lax state of the palpebral integument alone, it may be easily remedied, by a very simple operation. The lid being restored to its proper situation, a portion of the integument should be raised, in a transverse fold, between the fore-finger and thumb, or between the extremities of a pair of forceps, so as to render the surface otherwise smooth, at the same time that the lid is in its natural situation ; this fold of integument should then be removed, either with a knife or scissors : the edges of the wound thus produced should be closely approximated ; first, by the insertion of two or three sutures of fine silk ; and, secondly, by the application of adhesive plaster. The patient being kept quiet for two or three days, the sutures may then be removed ; as by their creating irritation, they are likely to interrupt the per-

Removal of
integument.

fection of the adhesive process. I usually remove them, about forty-eight hours after insertion; and in about the same space further, the cure is completed.

In some instances, the patients will object to this mode of relief; or any, in which a cutting instrument is to be employed; when the following plan may be adopted, with equal success.

The surgeon, having provided himself with a piece of hard wood formed somewhat in the shape of a small pencil, and some strong sulphuric acid, should restore the lid to its proper position, by pressing on the integument. The surface of the lid should then be made perfectly dry, by a piece of soft linen or lint; after which, the sulphuric acid should be applied, with the wooden point; the application being first made to the whole transverse width of the lid, about an eighth of an inch from the attachment of the cilia, and extended, by successive applications, in a direction from the cilia by further transverse lines; each in succession being of rather less extent than the preceding, so that a somewhat triangular figure results; the base being towards the margin of the lid. If, during the application, any fluid escape from the eye to the surface of the eyelid, it should be immediately removed, by means of lint; otherwise, the acid becomes so far diluted that it will not produce the desired ^{Application of acid.}

effect. The proper action is evidenced by the surface becoming of a dull white aspect, and corrugated. The extent of the application must be regulated, by the corrugation of the skin; for, as soon as this contraction is sufficient to maintain the natural position of the lid, enough acid has been applied; emollients should afterwards be employed, to promote the separation of the part destroyed by the escharotic, which will take place in the course of a few days. The healing of the wound rapidly ensues, and a degree of contraction takes place during the process of cicatrization, usually about equal to that resulting immediately from the application of the acid; at least, such has been the result, in most of the instances, in which I have adopted this mode of treatment. I need hardly say, that it is by far the most painful, as well as the most uncertain, plan of treatment. In either case, the surgeon must be extremely careful not to do too much; for if he remove too large a portion of the skin by the knife or scissors, or destroy more than is necessary by the acid, he will create a disease equally annoying and disfiguring, *viz.*, eversion.

Of partial thickening of conjunctiva.

When the inversion is owing to a partial thickening of the conjunctiva, with or without a loose condition of the skin, the principal object should be to reduce the mucous membrane to its proper state; when it must be evident, that the

patient will be effectually relieved, if there be not the state of integument above mentioned ; and even when this does exist, it may be afterwards easily corrected, by one of the methods I have described. Before any applications can have the desired effect of restoring the proper character of the conjunctiva, some means of maintaining the palpebra in its natural position must be established ; otherwise, the continuance of the entropium will render the remedies employed for the conjunctival affection unavailing. The measures, most usually resorted to, consist in the application of adhesive plaster fixed on the surface of the lid, and to some extent of the surrounding surface ; so as to draw upon the integument, and thus maintain the natural condition of the lid ; or, sometimes, a small compress is placed on the surface of the lid, immediately over the situation of the thickened conjunctiva ; and this is retained, in such position, by adhesive plaster ; and, by its counter pressure, prevents the entropium. Both of these means are, however, objectionable ; as an epiphora always exists, and the fluid, escaping from the surface of the eye, soon destroys the adhesive quality of the plaster ; repeated fresh applications must in consequence be made, or the entropium will return. I have, for some years, made use of a very simple instrument which completely reme-

dies the evil, and which is attended with very little inconvenience ; a piece of flexible plated wire, of about the thickness of common string, is bent so as to represent, somewhat, the frame of a spectacle, excepting, that there is a semi-circle, instead of a complete circle, like that for containing the glass ; the portion which rests in connection with the palpebra is so bent, as to present a convexity to the orbitar border of the lid ; so that when the whole frame is secured round the face, this convex portion presses upon that part of the lid thrust outwards, by the thickened mucous membrane of the eye ; and relieves the inversion by destroying the influence of the morbidly thickened tunic : if the narrow wire be not sufficient to produce the desired relief, the bulk may be easily increased by the addition of a small piece of lint or linen. This frame should be worn constantly, night as well as day, until the conjunctiva resume its healthy aspect. The recovery of the conjunctiva may be much accelerated, while the entropium is prevented, by the use of mild stimuli, and astringents ; as solutions of alum, salts of zinc, and lead ; and further, the mercurial ointments diluted. Should the membrane appear congested, as well as inflamed, the application of a few leeches, or the abstraction of blood by scarification of the diseased membrane, will, in some in-

stances, afford much immediate relief, and favor the cure. I do not consider it good practice, in such cases, to excise any part of the membrane.

For many years I have been satisfied of the ^{Of contracted} existence of the third disease ; and it frequently occurs with the relaxed condition of the skin which I have already described. Since I have been able to detect it, I have not had much difficulty in the treatment ; in the first place, I make a perpendicular section of the whole substance of the lid, near its centre, and this relieving the tension of the lid, will, in some cases, be followed by a rapid removal of the inversion : at other times, it is necessary, in order to complete the relief, to remove or destroy a part of the integument, as before mentioned. The perpendicular section of the lid is immediately followed by a separation of the edges of the wound ; and it presents an outline similar to that of the letter V ; wide at the ciliary margin, and terminating in an acute point, in the opposite direction. This wound is afterwards gradually filled by granulations, and very little deformity results. I have performed this operation both on the superior and inferior palpebra ; and, in every case, hitherto, with perfect success.

The fourth form, which I have described, is ^{Of curved} by far the more difficult to treat : numerous ^{tarsus.} plans have been from time to time proposed, and

carried into effect, for its relief; but, when the contraction is very extensive, I believe that little good can be done, by any method, short of the removal of the tarsus itself; or of so much of its free margin and the textures in connection with it, as will include the cilia, and the follicles from which they grow. In those cases, in which the curvature of the tarsus is unconnected with any great irregularity of its ocular surface, the removal of its free margin will suffice; but when the ocular surface is very irregular and indurated, it will be necessary to remove the whole of this body. To excise the ciliary margin of the lid, the surgeon should be provided with a cataract needle, which does not cut upon the edge, and a small pointed knife, such as is used in the extraction of cataract. The patient being placed recumbent on the back, the needle should be passed from the outer part of the free margin of the lid, beneath the integument, and near upon the tarsus, close to the attachment of the cilia, until the point is brought out within about an eighth of an inch of the punctum lachrymale. The first incision with the knife should next be made through the integument, &c., down to the substance of the tarsus, parallel to the free margin of the lid; but at such a distance from it, as to be perfectly clear of the roots of the cilia: internally, it must terminate short of the punctum

Removal of
tarsus.

lachrymale ; injury to which must be carefully avoided. Two further incisions should next be performed ; one, close to the outer canthus of the eye ; and the second, just to the outer part of the position of the puncta ; these being perpendicular in direction, should join with the outer and inner extremities of the transverse wound : further, the tarsus should be cut through in the direction of the first incision, so as to separate its free border with the cilia attached to it. In the other case, when the whole of the tarsus is to be removed, the eyelid must be forcibly everted and fixed, whilst the surgeon freely cuts through the conjunctiva and other structures, (excepting the integument and orbicular muscle,) at the orbital margin of the tarsus ; this margin should then be seized with a hook, or a pair of forceps, and drawn outwards, whilst the fibro-cartilaginous body is dissected from its surrounding connections : it is necessary also, in this instance, to remove a portion of the integument corresponding to the margin of the lid, so as effectually to prevent the further development of the cilia. A very small portion of the tarsus, sufficient to support the punctum, must be left at the inner canthus.

Both of these operations create considerable deformity ; not, however, so much as would be imagined : and, as far as my experience goes,

they afford the only effectual means of remedying, not only a painful disease, but one, which, if allowed to remain, would ultimately destroy vision.

OF EVERSION OF THE EYELID.

ECTROPIUM, from *ex*, out, and *trepo*, to turn.

Synonyme and
Derivation.

Little inconvenience results from this affection, in the commencement, beyond epiphora or watering of the eye, which is principally consequent on displacement of the puncta ; if, however, the disease continue, the patient suffers from inflammatory affection of the conjunctiva, produced either by the influence of the air, or the lodgement of extraneous particles ; this inflammation may proceed to create changes in the cornea, injurious or destructive to vision : the continued flow of the secretions from the eye, over the surface of the cheek, induces a state of irritation, and excoriation.

Local symp-
toms.

Great deformity arises from this complaint ; the displacement of the lid is apparent, when inspected from a distance ; its exposed mucous surface usually exhibits a bright, florid color ; and is, occasionally, found much thickened, and with an uneven, villous surface. Inflammation usually

Appearances.

exists in the ocular portion of the conjunctiva ; and the cornea is often found ulcerated, or nebulous : the inferior palpebra is most frequently affected ; sometimes the superior, and more rarely both. (*See plate 7, fig. 4.*)

Causes.

The first and most frequent cause of ectropium, is a partial, or complete, thickening of the mucous lining of the lid.

Secondly,—this disease is produced by a contraction of a cicatrix, or cicatrices, in the integument of the surrounding part.

Thirdly,—the eversion sometimes arises in consequence of curvature in the tarsus, after injury or ulceration.

Persons
liable to.
Treatment.

Those of all ages.

Ectropium, depending upon a thickened state of the conjunctiva, may exist in connexion with either acute or chronic inflammation. I have frequently seen it in the infant, suffering from acute purulent inflammation ; and, occasionally, in the adult, under similar circumstances.

This form is, however, rarely of long duration ; for, as soon as the acute symptoms are subdued, the tumefaction of the membrane subsides, and the lids regain their natural position : if this do not speedily occur, the surgeon will do well freely to incise the membrane by transverse cuts, that its vessels may be freely emptied, and its reduction accelerated.

The cure may be further aided, after the acute stage, by the application of astringents.

The ectropium much more frequently occurs from a continued chronic disease, which creates a partial thickening of the conjunctiva; this is greatest near to the free margin of the lid; and, as it increases, it separates this margin further and further from the globe; after a time, a slight degree of eversion takes place; and, by degrees, the whole of the lid turns outwards. As the eversion is produced, the tarsus is stretched, especially at its free border; so that when the membrane is reduced to its ordinary state, the tarsus does not contract, so as to adapt itself to the surface of the globe; the continued stretching having destroyed its elasticity. To remedy this form of disease, the first object will be, to reduce the tumid condition of the conjunctiva, which may be effected by astringents, and stimulants, and the performance of occasional scarification. When the membrane has nearly recovered its natural condition, the tarsus must be shortened by operation, that it may again be applied closely and accurately to the globe; and this may be readily done, by the following simple means.

The lid being first restored, by violence, as ^{operation.} near as possible to its perfect situation, the operator can readily ascertain how much should be

removed : having determined on this point, he should pass a needle armed with a ligature, through the substance of the lid, near to the centre of its ciliary margin ; and should then remove the requisite portion, by two incisions carried obliquely, so as to meet each other, and to separate a portion, of a wedge-like figure. The edges of the wound should afterwards be brought together by a fine suture, or sutures : the lid being restored to its proper situation, union will generally be so complete, in forty-eight hours, that the sutures may be safely removed ; but, if left for a much longer period, they are apt to excite ulceration, which quickly destroys the adhesion of the edges of the wound. This operation should not be attempted whilst much thickening exists.

The degree of relief to be afforded, by surgical means, in the cases of ectropium which have been caused by a contracted state of the integument, depends, very much, upon the extent of such contraction ; for there may exist merely a simple band, or the whole of the skin may be affected. When the contraction is but partial, the case admits of being much benefitted, in the greater number of cases ; but, in some few, even when the appearances are very favorable, little good can be effected.

Even with the most careful treatment, the

termination, after operation, is extremely uncertain. In operating on such cases, the surgeon must liberate freely any contracted bands which may have formed, either in connection with the subjacent soft structures, or with the bone ; and, if any of these bands be very hard and callous, they should be completely excised.

The more remediable cases are those in which the contraction takes place with adhesion and puckering of the integument, after separation of diseased bone from the margin of the orbit or cheek. The most severe and extensive cases are those, in which a large extent of the integument has suffered, from scald or burn. After such accidents, I have seen the free margin of the inferior palpebra drawn down, so as to be on about the same plane, or on a level with the margin of the ala of the nose. Besides the mere division or removal of the contracted bands, by operation, it is usually necessary to remove a portion of the tarsus, and other structures of the lid, as described in the former instance : for the tarsus becomes elongated, as well as everted, from the stress of the surrounding contraction.

It is required, further, that the lid should be well supported in its proper situation, during the progress of cure ; the wound being allowed to heal very gradually, and not excited by the use of stimulants.

Plastic
operations to
form new lid.

In several severe cases of ectropium, after burns, I have adopted the following plan; and in every instance with considerable advantage, as regarded the removal of deformity, and protection to the globe.

Having carefully divided the cicatrix of the integument, at a little distance from the ciliary margin of the everted lid, I have carefully liberated the lid by dissection, so that I could, after the removal of a V shaped portion, restore it to its natural situation, and adapt it to the surface of the globe. Having effected this, I have, in the next place, raised a portion of sound integument from the temple, or side of the cheek, of the size and figure of the wound created by the previous part of the operation. The sound integument being left attached by a small strip in the situation nearest to the cicatrix, I have then turned it, and secured it by suture, partly to the replaced lid; and further to the edges of the wound, formed in the restoration of the lid.

Case.

A. A young woman applied at the Ophthalmic Hospital, having eversion of the superior lid of the left eye, which had resulted from destruction of integument, &c., covering the outer part of the eyelid and brow, by burn, and the great contraction of the cicatrix, after the part had healed: the tarsus was much elongated, and drawn upwards and outwards, and at the same

time everted so that part of its ciliary margin was attached over the external angular process of the frontal bone ; the eye was irritable, and the conjunctiva of the globe was inflamed, in consequence of constant exposure of part of it ; the patient being unable to close the palpebræ.

Fortunately, the burn had not injured the skin of the temple or cheek ; and I immediately proposed to the patient, to remedy the deformity by operation, which she readily consented to.

A few days after, the young woman being in a proper state of health, I performed the operation in the following manner :

First,—I dissected the tarsus away from the eyebrow, and liberated it altogether to a sufficient extent to allow me to place it in a proper position on the globe ; being, however, much elongated, I was obliged to excise a wedge-shaped portion of the entire structures, to adapt this part of the lid accurately to the surface of the globe ; and I secured the divided parts by fine sutures. Having thus succeeded in restoring the principal part of the eyelid to its proper position, I next raised a sufficient portion of skin with its cellular tissue from the temple, to cover in the space between the free margin of the lid and the brow, where the integument was deficient ; the skin raised from the temple was so far detached, that only a narrow portion remained of

its original connections ; and this point of connection was near the outer canthus of the eye, towards the cheek. The integument from the temple was next turned into the place over the eyelid which I wished it to cover, and I carefully secured it in the new position by a number of fine sutures. After the operation, a light bandage of dry linen was placed over the eye, and the patient was desired to keep both eyes closed.

The union of all parts was most perfect ; about fifty hours after the operation the sutures were all removed. For a few weeks after, there appeared to be a superabundance of new skin ; for the part looked swollen, and the patient could not move the lid well ; but since then, the transposed integument has shrunk, and the cure is as complete as surgery could make it ; very little deformity remains ; and the eye is perfectly quiet, and sound.

Case.

B. There is now in St. Thomas's Hospital a man of the name of Frost, for whom I have made two lower eyelids, a new nose, and a large extent of new mouth. For several years he suffered from lupus ; and, in consequence, lost the larger part of his nose, and a great portion of the integument from the lips and cheeks, by slow ulceration. I succeeded in checking this horrible disease, and promoted healing of all the

ulcerated parts ; but, during the healing process, and subsequently, so much contraction took place in the new formed matter, that both inferior palpebræ became everted to a great extent ; and the orifice of the mouth contracted so that it would hardly admit the passage of a pencil ; all the prominent parts of the nose, excepting those appended to the ossa nasi, had been destroyed.

First,—I remedied the ectropium, operating upon one lid at a time ; and taking the skin required, from the side of the cheek—the principle and conduct of the operation being as that adopted in the foregoing case. When the effect of the first operation was completed, I performed a second, precisely similar, on the opposite side ; which succeeded equally well ; and thus the ectropium of each lower eyelid was removed. Subsequently, I made a new nose, taking the skin from the forehead, also with success : and lastly, I enlarged the mouth, according to the plan recommended by Dieffenbach, of Berlin ;—this operation turned out as I wished ; and thus I formed many of the striking features of Master Frost's face.

I have been equally successful in several other operations which I have performed on similar principles, to obviate the deformity and distress caused by ectropium of great extent.

Eversion of the eyelid, from a morbid condition of the tarsus without any disease in the neighbouring integument, very rarely occurs ; and I do not know of any mode of relief, besides that recommended in cases of entropium from the same cause ; viz., the removal of a large portion, or the whole, of the affected structure.

OF HORDEOLUM, OR STYE.

A **SMALL**, circumscribed, inflammatory tumor, seated near the free margin of the eyelid—usually about the size of a small barley corn—from whence the term *Hordeolum*, as diminutive of *Hordeum*.

An itching, or slight smarting, is first felt in the part ; this is soon followed by a more continued pain ; sometimes rather severe, with frequent pricking or darting.

I have known slight febrile excitement in connection with the formation of several hordeola at the same period.

At the point where the irritation commences, a small red tumor soon arises ; as it increases, it becomes more and more conical ; the color, at first bright and florid, gradually gets darker and more dull, especially towards the base ; whilst the apex presents a yellow head—the pus secreted being visible through the transparent cuticle. *See plate 7, fig. 5.*

Several of these swellings occasionally appear

Definition and
Derivation.

at the same time ; and I have seen the margins of the palpebræ loaded with them.

Causes.

Sudden changes of temperature, and, especially, exposure to sharp and cold winds. They also frequently appear when the digestive organs are deranged.

Persons liable to

They are most frequent in children and young persons. Those having a scrofulous habit, and weak constitutional powers, are particularly subject to them.

Treatment.

In the commencement of the milder cases, the simple application of cold will generally subdue the inflammatory process ; as a cold lotion, a piece of metal, or ice ; hence the virtue of particular rings or keys, used as charms by nurses and others.

When the lancinating pain is felt, and the tumor has become of a purple or dark red color ; or, more especially, when it has acquired the yellow apex, emollients should be substituted for cold applications ; as poultices of bread or linseed ; and fomentations simple or medicated ; and this plan should be continued, until the matter has been discharged, and the inflammation has nearly subsided.

The cure is, in the majority of cases, completed in a few days, for immediately the pus is discharged, the disease disappears.

In some few instances, the complaint remains

obstinate and troublesome ; and this arises from the following circumstance : a small portion of the cellular tissue loses its vitality, and must be thrown off, before the part can heal ; but the aperture made by the ulcerative process, and by which the matter escapes, is not sufficiently large to allow of the escape of the small slough, which, therefore, continues to irritate. When this happens, a small opening may be perceived at the apex of the swelling, through which a little discolored pus may be pressed. It is most effectually relieved, by the introduction of a point of a pencil of nitrate of silver into the opening ; this has the effect of enlarging the aperture, and of diminishing the slough ; so that it soon after comes away. If the ulcerative process be allowed to proceed undisturbed, this circumstance rarely occurs ; but it generally ensues when the pus is evacuated by design, as by puncture ; or accidentally, by scratching the part with the finger nail, to relieve the irritation.

The repeated formation of hordeola, sometimes creates a thickened and irregular state of the ciliary margin, which is not, however, detrimental to the function of the part. (*Grando.*)

OF INABILITY TO CLOSE THE PALPEBRAE.

Synonyme and Derivation. **LAGOPHTHALMOS**,—from *lagos*, a hare, and *ophthalmos*, an eye.

Symptom. The patient cannot bring the eyelids together by muscular effort; the eye is, therefore, constantly open.

Appearances. If the affection be recent, the surface of the globe is simply suffused with clear fluid, and the punctalachrymalia cannot act; and the secretions, therefore, accumulate on the conjunctival surface, and are discharged from time to time over the lower eyelid, on to the cheek. The palpebrae are separated more or less in different cases.

When the disease exists for several days, the conjunctiva inflames from constant exposure.

I have seen a partial congenital defect of this kind.

Causes. It sometimes results from injury or disease, which causes displacement; with contractions or adhesions of the palpebrae, such as I have described under the subject of ectropium. The

most common cause of lagophthalmos is paralysis of the facial nerve ; and to this subject I shall confine my further remarks.

The nerve may have its functions impeded or destroyed :

1. By influence of cold.
2. By inflammation connected with the ear or temporal bone.
3. By injury to the temporal bone.
4. By pressure of tumor upon the nerve.
5. By division of the nerve in operations or by accident. And,
6. By cerebral disease.

It is highly important that the cause of the paralysis should be ascertained, before treatment be commenced ; for, in some instances, the affection is of trifling importance, and is easily removed ; whilst, occasionally, it results from serious disease, and requires much careful and judicious management to subdue it.

When resulting from the influence of cold, the Treatment. affection arises suddenly, and without much pain ; the patient is, usually, aware of the cause, and, generally, complains of numbness as well as of loss of voluntary power over one side of the face —shewing that the nerves of sensation, as well as of motion, are affected.

When thus produced, the complaint is rarely If from cold. of long duration, usually subsiding after a few

days ; but the cure is promoted by attention to the secretions, moderate diet, and the use of fomentations locally : when it proves obstinate, blisters should be applied behind the ear, one succeeding another, as soon as the condition of the skin permits.

If from inflammation of the ear.

When resulting from inflammation of the ear, the symptoms are too obvious to require description here : the aural disease always precedes the affection of nerve. The treatment should, in such cases, be directed to relieve the disease of the ear ; the cure of which, relieves the paralysis of the nerve.

If from fracture.

Injury to the temporal bone has also its symptoms well marked ; as bleeding from the meatus, deafness, &c. ; it is, usually, connected with other serious mischief which leads to fatal consequences ; and even when the patient survives, the prognosis, as regards the paralysis, is unfavorable.

Treatment should be adopted, first, to check inflammatory action ; and secondly, to promote absorption of extravasated matter.

If from tumor.

There is little probability of mistake in the diagnosis, when any morbid growth presses on the nerve in its course external to the cranium.

If the disease be of a character to offer a fair prospect of success to treatment by operation, the tumor should be extirpated.

It is in the performance of such operations, If from division of the nerve. that the nerve is most frequently divided ; and in some cases, it is hardly possible for the surgeon to avoid such injury ; but he may, nearly always, avoid excising a piece of the nerve, which would, in most cases, render the paralysis permanent : otherwise, the voluntary power returns by degrees.

Most of the cases of lagophthalmos, which If from cerebral disease. have come under my observation, have resulted from cerebral disease ; and the symptoms of such disease have been very decided.

I have succeeded in relieving most of these Consequences. cases, by the plan of treatment which I have recommended for amaurosis, connected with cerebral effusion, or organic disease, from excess of local action.

If the disease be not relieved, and the eye remain exposed, severe ophthalmia may take place, with ulceration of the cornea : but any serious mischief of this kind can be prevented by keeping the eye covered, and protected from cold air, and bright light.

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O F T U M O R S
O F
T H E P A L P E B R Æ.

O F T H E S M A L L S E B A C E O U S T U M O R S.

Synonyms. THE term of millet seed tumor, has been applied to these; but I have adopted that mentioned, as indicating the nature of their contents,—*milium*.

Appearances. These little tumors seldom appear singly, but often in very large numbers, over the surfaces of the palpebræ and cheek; also, on the side of the nose. They seldom exceed in size the head of an ordinary pin; they are smooth, shining, and of a white color, having broad bases, and diminishing, gradually, to their free terminations; not, however, terminating in acute points. They appear to consist of a deposition of sebaceous matter beneath the cuticle, the transparent nature of which renders this white deposit apparent. They rarely inflame; but, occasionally,

the cuticle gives way, either from accident, or over distention, the sebaceous deposit escapes, and the part quickly recovers its healthy character.

Young persons of fair complexion and clear skin. Persons liable to Treatment. The removal of them is most readily effected and unattended with the slightest risk; otherwise, as they create but slight deformity, and do not produce any suffering, any operative measure would not be advisable.

A common darning needle, or a small cataract needle, being made to penetrate the cuticle which covers the sebaceous deposit, a very slight pressure suffices to expel this white matter. In this way I have removed, I should think, hundreds from the surfaces of the lids and cheeks of the same person; puncturing a dozen or twenty in succession, and then pressing the part with the extremity of a probe. After the operation, a slightly astringent lotion should be applied, and continued for a time, in order to prevent the occurrence of fresh disease of this kind.

OF THE GLANDIFORM TUMOR.

I HAVE employed the term glandiform as expressive of the nature of the tumor.

Appearances.

These tumors commence, in a manner very much resembling those last described, excepting that they are less numerous. At first, there is an appearance of a deposition of a white sebaceous matter beneath the cuticle ; but the aspect of the tumor soon alters, it increases to a much larger size than that last described ; and, occasionally, acquires a magnitude equal to that of a small bean. As it increases, the uniform white surface is interrupted by streaks, and it becomes somewhat mottled. If allowed to proceed, suppuration occurs in its centre, and this occasionally takes place, when it is of small size—not so big as a small pea ; or it may not occur, until it has acquired the magnitude I have mentioned above : when matter forms, it gradually makes its way, by ulceration, through the summit of the swelling ; and, after its escape, the cavity formed by the abscess is gradually filled up, by the increase of the morbid growth : and, after the cavity is thus obliterated, the growth is continued through the aperture by which the matter has escaped. This growth is irregular, and resembles very much in appearance the common wart, for which it is very constantly mistaken. Sometimes, two or three of these tumors exist on the same palpebra ; and very often, others may be perceived on different parts of the face : when three or four do exist,

it is not uncommon to find them presenting the different stages I have described. I have often seen them seated immediately on the free border of the lid ; and, sometimes, creating a good deal of irritation, by rubbing on the surface of the globe during the motion of the lid.

The only effectual way of getting rid of them Treatment. is by removing them ; which may be readily done, by passing a lancet, or pointed knife, through the tumor, so as to divide it from base to summit, with some part of the surrounding and investing integument. After such division, firm pressure with the nails and extremities of the fore-fingers, on opposite sides of the base of the tumor, will cause it to rise, so that it may be readily detached, by seizing it with a pair of common dissecting forceps ; when excised and examined, the morbid growth has a very close resemblance to a portion of a conglomerate gland, as the lachrymal, parotid, or pancreas ; and from this circumstance I have called the tumors *glandiform*.

This plan answers in all stages of the disease ; but when suppuration has taken place, the adhesions to the surrounding parts are usually firmer ; and rather more force is therefore necessary to bring away the morbid part. After the operation, the application of the lead lotion, occasionally, is all that need be adopted.

OF VESICULAR TUMORS.

Synonyme.

PHLYCTENULA.

Appearances.

I have frequently seen the cuticle elevated, near the free margin of the palpebra, by a deposition of serum beneath it, forming small vesicular tumors. This formation is unattended with pain, or any marked symptom, unless it arise in such a situation as to come in contact with the surface of the globe ; when it produces a slight degree of irritation, from friction, during the motions of the palpebræ. The tumors are semi-transparent ; and seldom exceed, in size, the volume of a swan shot ; occasionally, a single one arises, but more frequently many exist, at the same time, upon one of the lids.

Persons
liable to.

I do not recollect to have witnessed this complaint, except in persons above the middle period of life, and mostly in those advanced in age.

Treatment.

If simply punctured, so as to allow of the escape of the fluid, the tumor soon again becomes apparent ; but, if a considerable portion of the vesicle be removed, and some stimulant or escharotic applied, there is seldom any return. The parieties are so very thin, that it is difficult to demonstrate any thing like cyst ; but from

the slowness of their growth, the quick re-production of the fluid after it has been evacuated, and the necessity of creating a new action to annihilate the disease, I am induced to believe these tumors to be encysted. The excision of a large part of the tumor, and the use of stimulants or escharotics, I have not found, in any instance, to occasion injury.

OF WARTS OF THE PALPEBRAE.

Synonyme.

VERRUCÆ.

The growth of true wart upon the palpebra is extremely rare : but the ulcerated stage of the glandiform tumor, already described, is constantly mistaken for such an affection. When a wart does arise, it presents the same characters as when seated in other parts of the body—being hard, little sensible, and presenting a rough summit.

Treatment.

If the growth be prominent, a fine ligature should be applied to the base, so as to destroy the vitality of the larger part of the tumor ; and, when the ligature has separated, the remaining portion of the wart may be treated with a little strong acetic acid—the part being touched with the acid, twice or thrice in the day, until all vestige of the disease has subsided. This is also a useful remedy when these tumors exist in other parts of the body ; it quickly destroys the morbid growth, without suffering or inconvenience.

OF ENCYSTED TARSAL TUMORS.

THE patient sometimes complains of a slight uneasiness or stiffness of the palpebra, in which the tumor is connected ; this is, however, rarely of any serious inconvenience.

When small, the tumor is scarcely apparent to Appearances. external view, and can be only felt, beneath the integument of the palpebra ; and the sensation communicated to the finger is such, as if a small shot were seated in the cellular tissue, beneath the skin ; it also feels as if loose beneath the integument, and is usually situated near the centre of the tarsus. If, however, the lid be everted, a discolored spot on the inner surface of the tarsus, &c., indicates the point of connection between the tumor and this structure. The tumor slowly increases ; and many weeks or months frequently elapse, from the period at which it may be first felt, until it has acquired sufficient size to be readily perceived, on viewing the outer surface of the palpebra. (*See plate 7, fig. 5.*) The

integument, immediately above the tumor, is, generally, of the natural color and appearance ; unless any acute inflammatory action be set up, then it assumes a reddish color. This rarely happens, until the swelling has increased so far as to be readily perceptible. It is at first hard and circumscribed ; as it increases, it diminishes in density, and acquires an elastic feel ; but is still firm ; it seldom exceeds in size the bulk of a common pea. The spot I have alluded to, apparent on the inner surface of the lid, is at first red, and as it increases, the centre exhibits a yellowish cast ; and, in the more advanced stage of the disease, a bluish spot occupies the centre ; whilst, immediately around this, the redness is still apparent : frequently, more than one exists at the same time.

Persons
liable to.

Treatment.

These tumors seldom appear, either in infancy, or in advanced life.

The diagnosis of this disease is important, as it is most readily cured, when recognized, merely by everting the lid, and puncturing the cyst, through the conjunctiva and tarsus ; and, immediately that the fluid contents have escaped, breaking up the cyst, with a pointed probe, introduced through the puncture, and forcibly moved about in all directions.

Immediately on the puncture, a quantity of fluid escapes, unless the tumor be excessively

small. This fluid is sometimes limpid and clear, like serum ; or, frequently, glairy and viscid, like the white of egg ; occasionally, semi-purulent ; and, in some few instances, curdy. The cyst itself is of a pulpy consistence, and readily breaks down under the pressure of the probe ; and is discharged immediately through the artificial opening. Unless the cyst be freely broken, the disease is apt to return ; but if well lacerated, adhesive inflammation soon follows, and fibrin is deposited, which, for a time, distends the part as much as the previous cyst and contents. After a few days, the swelling begins to diminish ; and, gradually disappears.

If an attempt be made to excise the cyst from the exterior, the removal cannot be effected without injury to the tarsus ; such as might afterwards create much deformity, and inconvenience ; these attempts are every now and then made by surgeons unacquainted with the true nature of the disease, and with the simple plan of treatment I have already described ; and much mischief sometimes ensues from deformity of the lid. This mistake arises from the apparent mobility of the tumor beneath the skin ; leading to a supposition that, if exposed, it might be readily taken out.

Whilst the tumor is very small, it should not be touched. I usually judge of the fitness of the ^{When fit for} operation.

part for operation, by the examination of the inner surface of the lid ; and do not puncture, until I find that the discolored part, on this surface, exhibits a small bluish spot in the centre. It requires that the cyst should be freely broken up ; otherwise, the disease will return. Out of some hundred cases, in which I have performed this operation, the disease has only reappeared in three or four instances, in which the patients have not allowed the cyst to be properly lacerated.

OF ENCYSTED TUMORS OF THE PALPEBRAE,
UNCONNECTED WITH THE TARSUS.

THESE tumors are more common in the neighbourhood of the palpebrae and orbit, than in any other part or parts of the body.

Appearances. They arise without pain or suffering ; have a defined, and usually, a rounded, firm, and elastic feel : most frequently, they are moveable, in a degree ; but, occasionally, attached firmly to the periosteum ; and, sometimes, where they are connected, the bone is considerably indented. They are slow of growth, and may be found varying in size from that of a small pea to that of a pigeon's egg, or larger.

They are most frequent in children ; and I ^{Persons liable to.} believe them to be, in many instances, congenital, as I have so frequently seen them in infants. They rarely originate in the adult ; but, occasionally, exist at that period of life ; having been allowed to remain untouched from infancy.

Nothing but excision will effect the removal ^{Treatment.} of these tumors ; and this mode of treatment may be readily resorted to in the young subject ; excepting at a very early period of life, when the loss of even a trifling quantity of blood may produce fatal symptoms. I prefer waiting until a child has passed through the first period of dentition, unless I find that the tumor is rapidly increasing, which, however, is very rarely the case.

To extirpate the tumor, I first expose the ^{Mode of removing.} cyst, by nipping up the integument, &c., and passing a pointed knife or lancet through the raised fold, in a direction parallel to the long diameter of the lid. I then expose, carefully, the anterior part of the cyst, by dissecting away the surrounding structures. The tumor is then raised with a hook, and its separation completed, if possible, without opening the cyst. If it give way, the surgeon must be careful to remove all parts of it. The wound is afterwards closed by simple adhesive plaster ; and such attention paid to rest, diet, and medical treatment, as favor

the process of adhesion. Now and then, suppuration follows ; but rarely so as to create any serious mischief.

Contents.

The contents of these tumors are usually sebaceous ; occasionally, glairy ; and, frequently, a number of small and fine hairs are mixed with these matters. The interior of the cyst, under such circumstances, presents a decided cuticular character, from the surface of which, numbers of these fine hairs are often found growing.

Cyst attached
to bone.

In those cases in which the cyst is intimately connected with the periosteum—and this is usually indicated by the indentation of the bone—I feel little disposed to meddle with them, as I have seen very extensive mischief result.

Case.

C. In one case in which an encysted tumor had existed, in connection with the frontal bone, near the middle of the superciliary ridge, an attempt was made, I believe, to excise the cyst, but unsuccessfully ; the operation was followed by excessive inflammation, and sloughing ; by which the bone became exposed, and subsequently exfoliated to such an extent, that some months after, when the lady was sent to town for my advice, I could touch some extent of the dura mater, from the loss of a large part of the roof of the orbit. I, eventually, succeeded in closing the wound, and, fortunately, but little deformity resulted.

D. In another case, a similar attempt had case. been made to remove a cyst, in connection with the malar bone : similar consequences ensued ; and nearly the whole of the malar bone exfoliated. The young gentleman who was the subject of this disease, was sent up to me at the time the exfoliation was going on ; considerable deformity must have followed in this instance.

Other cases in which exfoliation had taken place, in consequence of interfering with cysts firmly attached to the bone, have come under my observation, sufficient to warrant me in advising the surgeon not to interfere with them, unless they are producing serious inconvenience. They do not appear to increase much after the adult period of life, and I occasionally see persons by whom I was consulted respecting such tumors many years since ; but in very few instances, have I been able to perceive any decided augmentation.

OF NÆVI.

HAVING seen many cases of nævus situated on the palpebræ, I deem it necessary to warn the young surgeon respecting such disease.

Appearances.

As similar affections on other parts of the body, the nævus of the palpebra usually presents a defined, and rather elevated, red spot. The color is either a bright vermillion, or purple, corresponding to the tint of arterial, or venous blood ; and depending, of course, upon the structure of the tumor, whether composed of arteries or of veins. The color may be destroyed by pressure ; but returns within a few moments after the pressure is removed. Its intensity becomes increased, under any circumstances which augment the action of the heart and arteries, or interrupt the return of venous blood through the principal trunks. These nævi are at first, usually, very small, but rapidly increase, unless checked by surgical means.

I have seen a few cases in which the nævus has been sub-cutaneous, not affecting the skin at all, excepting so far as to elevate it a little: in these cases, the swelling has had a blue or red hue, and has been much increased in bulk, during any effort of straining, crying, &c.; and, at such time, the color has become more intense; for although the skin does not participate in the disease, its delicate structure permits the color of the nævus to be in some degree apparent.

My principal object, in mentioning this sub-^{Treatment.} ject, is to show the necessity of adopting early means, to arrest the growth of these tumors; which, from the great vascularity and laxness of the part, usually make rapid progress when left to themselves; and they may acquire so great a size, as to render their removal extremely hazardous to the functions of the part, and liable to create great deformity. When very small, a cure may be readily effected by exciting adhesive inflammation; or by chemical or mechanical means, by which, the vessels themselves, forming the chief bulk of the swelling, are obliterated under the altered action. The application of vaccine matter into the tumor, as in the ordinary operation of vaccination, I have known produce such a degree of inflammatory action of the adhesive kind, as to effect

a perfect cure. I have tried also, successfully, the application of the strong nitric and sulphuric acids ; such means will, however, only succeed when the nævi are very small. The more certain means consist of the use of the knife to excise the part ; or the application of a ligature to produce a more tardy separation ; and the surgeon should not delay the application of these means, when the disease appears rapidly extending. I much prefer the use of the ligature, as excision cannot be performed, without the division of vessels, which afford a free hæmorrhage ; and the patient cannot bear the employment of sufficient force to arrest the discharge of blood. Further, the operation is usually required at a period of life, in which the abstraction of very small quantities of blood may produce fatal consequences.

Application
of ligature.

In introducing the ligatures, I usually employ a common worsted needle, which is armed with a fine double silk ligature. This is then passed in, through the integument, at a little distance from the seat of disease ; and, after being carried carefully through to the opposite side, the needle is detached, and the silks are tied at the respective sides, so as to include the whole base of the tumor. The ligature occasions but little inconvenience or suffering, and separates generally in the course of five or six days, together with the

morbid part ; and the wound resulting, becomes gradually filled up, by adhesion. If the tumor have reached any considerable size, the removal, either by knife or ligature, is often followed by the formation of a cicatrix, which afterwards contracts ; and, either simply disturbs the functions of the part, or produces deformity, by creating partial or complete ectropium. On this account it is that such cases cannot be too early treated by surgical means. The mere discolouration which sometimes exists without any elevation, does not require the adoption of any severe means, as it is not likely to produce any ill consequence.

The nævus, which is entirely sub-cutaneous, cannot be excised or treated by ligature without great risk, or serious injury to the palpebræ, &c. There is, however, another mode of treatment, which I have tried with excellent success : the account of the following case will explain the plan.

E. An infant was brought to St. Thomas's case. Hospital, having a sub-cutaneous nævus, situated beneath the superior palpebra, and extending from the nose, beneath the eyebrow, outwards, more than half the length of the brow ; the skin was a little elevated and appeared purple, and the tumor increased greatly, and its color became

augmented when the baby cried: I could not ascertain its extent into the orbit. I treated the nævus by injection, on a plan I had previously arranged for such a case.

I made a puncture with a cataract needle through the skin, into the sound cellular tissue on the outer side of the tumor, carefully avoiding the nævus; and then I injected about half a drachm or rather more of a saturated solution of alum into the cellular tissue, by means of Anel's syringe and the punctum tube: the injection produced, as I expected, adhesive inflammation; and a part of the cellular tissue became compact and firm; and when this was effected, I made a fresh puncture below the nævus, through the skin, into the sound cellular tissue, and then injected a solution of alum, in the same manner, and to the same extent as before; by which I got a further part of the cellular tissue consolidated at the margin of the nævus. I repeated similar operations every three or four days, until the nævus was surrounded by compact cellular tissue, and this was effected in six or seven operations; and, as soon as it was accomplished, I injected the nævus itself with a similar solution; the injection produced inflammation, under which, the vascular structure was destroyed.

The only defect which resulted was a slight puckering of the skin.

I have treated nævi of similar character, in other situations, on the same plan, and with success.

OF ENLARGEMENT OF THE MEIBOMIAN
GLANDS.

AN irritation of the eye, as if from the lodgement of an extraneous body, between the lid and the globe ; sometimes to such an extent as to create a considerable degree of ophthalmia. Symptoms.

On evertting the palpebra, a small tumor is found of deep red color, and having a close resemblance to a small cluster of healthy granulations ; only being more firm to the touch—the conjunctiva around is usually a little inflamed. Appearances.

The disease is most frequently seated in the lower eyelid ; I have seen very few examples of it in connection with the upper.

The enlargement, in most cases, quickly subsides under the application of slightly astringent lotions, and mildly stimulating ointments—such as have been recommended to relieve chronic ophthalmia : when the disease has not yielded

readily to such means, I have used nitrate of silver, or sulphate of copper in substance, touching the part very lightly ; and have thereby accelerated the cure.

OF TINEA CILIARIS.

MR. WARE appears to have included this affection with several others, under the term of *psorophthalmia*; and, I believe, it is only at the London Ophthalmic Hospital that it is called *tinea*, in consequence of its bearing some analogy to the *tinea capitis*.

It commences with a slight degree of itching symptoms. and irritation in the ciliary margin, which gradually increases, until the part becomes tender and sore: the eyelashes adhere together during sleep, and there is, generally, some lachrymation.

In the first place, some few of the cilia have appearances. their bases enveloped in a small quantity of coagulated and viscid secretion; after a time, this appearance is exhibited in connection with nearly all the hairs; and, upon attentive examination, especially when the secretion has been removed, either small pustules or ulcers, may be perceived, surrounding the cilia. (*See plate 7, fig. 2.*) As the disease goes on, the free margin of the lid becomes thickened, and the regularity of the cilia disturbed; for, instead of having a

uniform direction, some are directed upwards, others downwards, or in various irregular positions. The collection of coagulated secretion is much more abundant; and, when taken away, more extended ulceration around the hairs may be perceived. These ulcers gradually spread; and, at length, communicate together; so that the margin of the lid presents a continuous raw surface: at the same time, the ulceration extends in depth, so as to destroy the follicles, from which the cilia grow—when the hairs fall out, and are not again re-produced. The destruction of the whole of the cilia, in this way, subjects the patient to constant attacks of inflammation, from the lodgement of small extraneous matters on the globe; and the margins of the palpebræ always exhibit a thickened, florid, and excoriated condition, constituting true *lippitudo*. (See plate 7, fig. 1.) We may say, then, that the tinea exhibits three stages: first, that in which small pustules or ulcers exist, in connection with the bases of the hairs, without much thickening of the margin of the lid, or irregularity in the position of the cilia: secondly, that in which the lid is thickened, and the cilia projecting in all directions: thirdly, that in which the greater part, or the whole, of the hairs, are lost, and a thickened and excoriated state of the margin of the lid exists.

I am inclined to think that this disease, which ^{causes} attacks scrofulous persons, is induced very frequently from neglect of cleanliness. It is exceedingly common among the lower class of Jews, who are notorious for their deficiency in this respect.

It usually occurs in children, and very rarely ^{Persons liable to.} commences after the age of puberty. I have known it to arise in the adult.

In the first stage it is necessary to cleanse the ^{Treatment.} part from the coagulated secretion which adheres to the cilia, by moistening this substance with tepid water, and then separating it with the finger nail, or with the point of a needle: after this matter has been well cleansed off, the diseased surface should be freely smeared with some slightly stimulating ointment, as that of the nitrate or nitric oxide of mercury, diluted, being merely of sufficient strength to create a slight smarting when applied. These means will usually suffice to promote a cure.

In the second stage, especially if the cilia be very irregularly placed, and the quantity of secretion be large, it is best to remove the cilia with a pair of forceps, as it enables the surgeon more readily to expose the small ulcers, and to remove the incrustation, which the alteration in the position of the hairs, otherwise, tends much to increase: the applications should be the same

as for the first stage ; but there is more necessity for an occasional change ; for when the disease has been of long standing, it cannot be rapidly removed ; the cure is accelerated by a variation in the forms of the stimuli applied. When removed, in this way, by the forceps, the cilia are usually re-produced ; and, if the thickening of the lid be subdued, they again grow in their natural positions.

The third stage admits of but little more than temporary relief ; the patient is constantly liable to suffer from the lodgement of small extraneous particles, consequent on the loss of the cilia ; and every slight attack produces addition of excoriation, and increased redness of the borders of the palpebræ. In this stage, the stimulating ointments also afford some relief ; and lotions of the solutions of the sulphate of zinc, the acetate of lead, nitrate of silver, &c., are often beneficial. The eye should be protected, if possible, by goggles, or a plain colored glass, at such times as the patient is exposed to the influence of a keen air or a bright light ;—we very rarely see any cases of this kind, without their being accompanied with a degree of chronic affection of the palpebral conjunctiva, and of the meibomian glands ; but these affections will yield to the use of the remedies above mentioned.

OF TRICHIASIS.

THE growth of one or more of the cilia towards the surface of the globe—from *thrix*, a hair. Definition and Derivation.

These are much the same as from entropium, Symptoms. and are fully described under that head. The only difference is in the amount of suffering, which is seldom so severe in trichiasis, as in entropium.

The margin of the lid usually exhibits evi- Appearances. dences of the previous existence of tinea, inasmuch as the cilia are often scanty; while those that do exist grow very irregularly; occasionally, a cicatrix is perceptible, evidently the result of some injury. The position of the palpebra remains unaltered, but a few of the cilia are found directed upon the globe, on which a degree of ophthalmia exists; and sometimes even a nebulous and vascular condition of the cornea.

Trichiasis is most frequently consequent on Causes. tinea, which has proceeded to ulceration, and has destroyed many of the cilia. Those which

remain, have their directions altered, by the contraction of the cicatrices resulting from the healing of the ulcers. The contraction of a cicatrix, after wound, or other injury, occasionally produces the same consequences.

Treatment.

If merely one or two hairs be inverted, the patient can be easily taught to relieve himself by extracting the hairs with a small pair of forceps, whenever they become troublesome. Or an assistant may remove them from time to time. Where several are inverted together, the excision of a portion of the lid, just sufficient to extirpate the part from which they grow, will be a more effectual means of affording relief. Such a plan is not, however, advisable, when there are many cilia remaining; as the contraction of the new cicatrix is very likely to produce inversion of some of the neighbouring hairs. The patient must, therefore, be content with having them removed as before mentioned, whenever they grow so as to occasion the slightest irritation.

OF SUPERNUMERARY EYELASHES.

DISTICHIASIS,—from *dis*, double, and *thrix*, a synonyme hair; because there sometimes appears to be a double row of cilia.

Are the same as those of trichiasis or entro-^{Symptoms.} pium; the severity of the suffering varying according to the extent of irritation of the conjunctiva.

The eye appears irritable, and some degree of ^{Appearances.} ophthalmia exists; the margin of the eyelid is usually thickened; and the cilia, which appear in much greater number than natural, do not present any regularity of growth, but project in various directions; sometimes a few, sometimes many, grow towards the globe, and cause the distress which induces the patient to apply for relief.

If the disease be neglected, a nebulous and vascular state of the cornea occurs; or ulceration of the cornea takes place, and permanent opacity results.

Causes.

I believe that this affection is usually produced from protraction of the second stage of tinea, or chronic inflammation of the palpebral margin ; and that there is not really an increase in the number of the cilia, but that the irregularity of their growth, and the thickened state of the free edge of the lid, give the appearance of additional numbers of hairs : perhaps, in some instances, there may be some augmentation in the number of the cilia.

I have not seen distichiasis as a congenital affection ; never indeed but in such as have suffered much previously from chronic disease of the palpebræ.

Treatment.

If but few hairs be directed upon the conjunctiva, they may be extracted from time to time, as directed in the treatment of trichiasis ; but if the inversion of the cilia be to great extent, nothing will afford effectual and permanent relief, but removal of part of the lid, as recommended in cases of inveterate entropium, with curved tarsus. I have tried a great variety of plans of treatment, in these cases, without effecting any permanent good ; and affording so little temporary relief, that I have been reluctantly compelled to resort to the severe plan of operation above referred to.

In some cases of distichiasis and trichiasis, a few of the inverted cilia are so very fine, that

they are only detected by very close inspection ; if they be overlooked, (when the thicker hairs have been extracted,) they create sufficient irritation to keep the patient in much suffering, and to prevent his using the eyes.

OF PEDICULI, OR LICE, IN CONNECTION WITH
THE CILIA.

Synonyme. **PHTHEIRIASIS.**

Symptoms. The presence of these small insects creates a great degree of irritation and itching about the free margin of the lid ; more than is usually experienced in consequence of tinea.

Appearances. Upon a superficial view, the patient may be supposed to suffer from tinea, as there is slight redness of the edge of the lid, and the cilia appear as if loaded with a morbid secretion ; but on close inspection, these small insects may be distinctly perceived, sustaining themselves by the hairs.

Causes. Will be the same as those favoring the appearance and propagation of similar insects in other parts of the body, which have a partial or complete covering of hair ; they resemble precisely those found in connection with the hairs arising from the scalp. Association or intercourse with those previously infested with them,

and a subsequent inattention to cleanliness, are usually the circumstances under which they appear, and afterwards increase.

It is very rarely that the pediculi are found in the situation above described ; and all such cases that I have seen, have been in children under the age of puberty.

The destruction of these minute insects may be usually accomplished with great facility, either by the free application of the strong mercurial ointment ; or otherwise, by a lotion composed of the bichloride of mercury in distilled water, or in combination with lime-water. The other mercurial preparations might be, perhaps, just as serviceable—those named, I have tried ; and can, therefore, speak confidently of their efficacy. I have not met with an instance, in which the disease has returned.

OF THE LACHRYMAL APPARATUS.

THE lachrymal apparatus consists

Of the *lachrymal gland*, and its ducts, which communicate with the surface of the conjunctiva, near its line of reflection, at the upper and outer part of the superior lid :—

Of the *caruncle*, which is a small follicular body, made up of numerous follicles, connected by a dense cellular tissue ; being similar in structure to the tonsil, or the prostate gland : it furnishes an additional quantity of mucus at the point where the secretions are passing off the ocular surface, to the puncta : and it is, in great measure, essential to the puncta :—

Of the *puncta lachrymalia*—one superior, another inferior—which are placed at the prominent point of each palpebral margin, just where it forms the inner canthus :—

Of the *canals* which lead from the puncta to the lachrymal sac, the course of each is bent ; the superior first passes upwards and a little out-

wards, and then bends at an acute angle, and passes inwards and downwards to join the sac : the inferior canal passes at first downwards and outwards, and then upwards and inwards : the two open into the lachrymal sac at a very little distance from each other :—

Of the *lachrymal sac and duct* : the *sac* occupies the sulcus in the lachrymal bone, and is bounded by the bone internally and posteriorly ; whilst anteriorly, it is covered by the skin and a portion of the orbicular muscle, and is crossed rather above its centre by the small tendon, usually called the tendon of the orbicularis muscle ; but which is properly the tendon of the tarsi, and connects them to the nasal process of the superior maxillary bone : the situation of this tendon, and its importance in supporting the tarsi, should be always borne in mind by the surgeon during operations on these parts : externally, the sac is covered by a fibrous tissue, and is opposed to the caruncle and orbit.

The *nasal duct* is continued from the inferior part of the lachrymal sac, to the inferior chamber of the nose ; gradually diminishing as it descends, or changing its figure ; for it is nearly round, where it is continuous with the sac above ; but it in general presents merely a fissure below where it opens into the nose : the direction of this fissure is from before to behind ; and it is

furnished with a fold or valve of mucous membrane, which readily allows the descent of fluids, &c., from the duct; but prevents the ascent of matter from the nose.

The direction of the duct varies according to the variation of the facial angle; thus, in the Negro, it usually passes downwards and forwards; and in the European downwards, or sometimes downwards and a little backwards.

This brief account of the apparatus, will, I trust, be sufficient, to enable the reader to follow me in the description of the operations, necessary for the cure of some of the diseases of these parts.

I shall describe the diseases of the different parts in the order in which I have just given an account of the structures.

OF THE DISEASES OF THE LACHRYMAL
GLAND.

I BELIEVE that this gland, as the other conglomerate glands, is not liable to much morbid action, for I have seen very few well marked cases of disease of it.

OF ACUTE INFLAMMATION OF THE GLAND.

IN three or four instances, patients have applied to me in consequence of severe pain, and tenderness in the position of the lachrymal gland; at the same time, there has been slight conjunctivitis. Only in one case was there any degree of swelling, which affected the superior lid generally, but I could not detect any enlargement of the gland itself.

In every instance the symptoms of disease Treatment.

yielded to local bleeding by leeches, fomentations, and free action upon the secretions, with abstemious diet, for a few days.

OF CHRONIC INFLAMMATION OF THE LACHRY- MAL GLAND, WITH ENLARGEMENT.

I HAVE seen only two cases of enlargement of the lachrymal gland ; and in each, the disease had effected the morbid change, with very little suffering : it had, I conclude, been very slow in its progress, so that the fibrous covering of the gland had been distended so gradually, as to yield without creating pain.

No change in the quantity or character of the ocular secretions indicated disease of the gland.

Treatment.

In both cases, mercurial treatment was tried ; also continued counter-irritation over the seat of disease ; and subsequently, frictions of mercurial ointments, but, without any good result : extirpation of the gland, was, therefore, advised and adopted ; the diseased mass had lost the conglomerate character of the original structure, and had acquired a dense and somewhat fibrous appearance, very like the ordinary chronic tumor of the breast : the disease was, in both cases, considered to be of schirrus kind, by the surgeons

who performed the operations : I did not, however, coincide in such opinion.

F. In another instance, I saw the lachrymal case. gland excised by mistake,—the patient had a tumor near the site of the gland, of a figure which an enlarged gland would, probably, have resembled : the operator, considering the tumor to be produced by a diseased gland, and being rapid in his operation, soon removed the diseased mass, which proved to be a steatomatous tumor ; but with it he had excised the lachrymal gland.

These cases have been alluded to in stating the functions of the conjunctiva.

O F D I S E A S E S
O F T H E
C A R U N C L E.

THIS little follicular body participates in most of the general conjunctival inflammations, but, especially, in those of muco-purulent or purulent character, both in their acute and chronic stages: it becomes affected in consequence of its being covered with the conjunctiva, and having free vascular connection with it. Under the morbid action it becomes enlarged, and redder than usual—the color varying according as the inflammation is acute or chronic.

It seldom requires any separate treatment, but usually regains its healthy characters, as the inflammatory action in the conjunctiva subsides.

Chronic en-
largement and
polypi.

Now and then, it remains enlarged after the disease of the conjunctiva, generally, has disappeared; and, sometimes, small red excrescences or polypi grow from it.

Treatment.

The general chronic enlargement, will, I believe, always yield to the use of local astringents

and stimuli, as employed for the cure of chronic ophthalmia, provided the general health be good: most frequently, there is some defect in the health, which has contributed much to the continuance of the local disease; so that general, as well as local remedies are commonly required in treating these cases.

When the disease proves very obstinate, the ^{Danger of} surgeon must have patience, and give his remedies a full and fair trial, and not proceed hurriedly to remove any part of the caruncle; for should he do so, and the remaining part afterwards recover its proper condition, the body does not present sufficient bulk to support the inner junction of the tarsi; consequently, the puncta lachrymalia become displaced, and the secretions are not properly carried away from the surface of the eye; therefore, epiphora results.

Excrencences, or polypi, may be removed without risk, provided that the substance of the caruncle be not injured by the operation: they may, in fact, be treated as the excrencences or polypi of the conjunctiva.

I have known the caruncle to be implicated in malignant disease, both cancerous and fungoid; such disease beginning in the lids, or the immediate neighbourhood: but I have never seen malignant disease commence in this body.

DISEASES OF THE PUNCTA,

AND OF THE
LACHRYMAL SAC AND DUCT.

Derivation. OF epiphora ;— from *epiphero*, to carry forcibly.

Definition. Watering of the eye.

The epiphora may result from either of the following causes, which I shall consider in succession :

1. A morbid condition of the puncta lachrymalia.
2. Displacement of the puncta.
3. Affection of the lachrymal sac.
4. Of the nasal duct.

The morbid conditions of the puncta lachrymalia which give rise to this troublesome affection, are contraction, dilatation, and obliteration.

OF THE CONTRACTED STATE OF THE
PUNCTA.

BESIDES the flow of the secretions from the Symptoms. conjunctiva and lachrymal gland, over the inferior palpebræ, there is an irritable state of the organ, with a sense of constriction as if the palpebræ were too tightly fitted to the surface of the globe ; and a confused state of vision, especially, in viewing bright objects, which appear to have a colored halo.

The surface of the globe is, generally, suffused Appearances. with the secretions before mentioned, which, affording an additional refractive medium, occasion the impaired state of vision ; beyond this, there is little to be perceived, unless on minute inspection, when the puncta lachrymalia will be found of so small a diameter as to be with difficulty recognized.

The disease is of rare occurrence ; and I have Causes. only seen it in persons naturally of an irritable temperament, and who have been rendered additionally so in consequence of debility.

Such general means as tend to relieve the Treatment. state of debility, and lessen the nervous irritation, I have, usually, found most beneficial ; for

immediately the constitutional powers are restored, the local affection subsides : I have tried various local means ; as, warmth and moisture, narcotic applications, and counter-irritation, without any benefit, as well as the forcible dilatation of the contracted apertures, by the introduction of a small probe ; but always with a similar result.

OF THE DILATED PUNCTA.

THE dilated state of the puncta lachrymalia is always consequent on a chronic affection of the palpebral conjunctiva, which I have already described under the head of "*Chronic Ophthalmia* :" it is attended with the symptoms which denote this latter disease, and requires the same remedies for its cure.

OF OBLITERATED PUNCTA.

THIS affection is, usually, very apparent, being the result of injury, or ulceration ; the evidence of which, usually, extends to some distance in the surrounding parts ; I deem it useless to enter

into any details on this point, as I do not conceive it possible for medicine or surgery to produce relief; for we cannot, by any artificial means, create a canal which will perform the same functions as the natural one.

OF DISPLACEMENT OF THE PUNCTA.

ALTHOUGH the condition of the puncta, and canals leading from them to the lachrymal sac, may be perfectly healthy, yet, it is absolutely necessary that they should retain their proper relative situations, in order to perform the functions for which they are designed: when, therefore, they are thrown at all from their natural position, epiphora immediately results.

This must be the case either where entropium causes. exists; or ectropium exists; or when the caruncle is either enlarged or lessened; or from injuries which disturb the proper adaptation of the palpebræ to the globe: I have known the incautious removal of the caruncle, either in part, or in the whole, or the division of the small tendon which supports the tarsi, by its attachment to the nasal process of the superior maxillary bone, create a permanent epiphora—although producing but a very slight change in the position of the puncta.

Treatment.

In such cases, as will admit of it, the proper position of the puncta must be restored, as no means short of this will succeed in removing the epiphora. Ectropium and entropium have been described separately, with the treatment necessary for their cure: and, also, the diseases of the caruncle. When the displacement occurs from the other causes which I have mentioned, I am not aware that any good can be done.

OF AFFECTIONS OF THE LACHRYMAL SAC.

THE lachrymal sac is subject to acute inflammation, chronic inflammation, and their consequences ; also to distension.

OF ACUTE INFLAMMATION OF THE SAC.

IT commences with severe pain and tenderness in the situation of the sac, which is quickly followed by epiphora and dryness of the corresponding nostril ; and some degree of swelling may be soon perceived near the inner canthus of the eye, which has a hard circumscribed feel, corresponding to the boundaries of the sac : if allowed to continue, the symptoms soon become more severe ; the pain is of a throbbing and lancinating character, and extends to the nostril and surrounding parts ; the tumor becomes more elevated, excessively tender to the touch, and

the surface of a reddish hue ; the swelling loses its hardened feel, and acquires considerable elasticity with a sense of fluctuation ; occasionally, the lids become œdematosus from extension of the inflammation, which occasions effusion in the cellular membrane.

Constitutional symptoms. Sometimes slight sympathetic fever is produced.

Causes. Acute inflammation of the lachrymal sac, unless in those who have been previously the subjects of some chronic disease, is very rare ; I have not been able to trace such disease to any particular causes, beyond those which create local inflammation in other parts.

Persons liable to. The disease is most common in scrofulous persons ; more so in children than adults ; and very rare in elderly people ; and, when once affected, the patient is liable to a return.

Treatment. The treatment of these cases is extremely simple in the early stage, whilst the tumor is hard, and the skin of its natural color ; the local abstraction of blood, and the application of emollients, together with abstinence, rest, and mild aperients, will subdue the disease : when, however, the tumor has become elastic, the integument discolored, and the patient has experienced lancinating pains, it is best, at once, freely to open the sac, and evacuate the matter it contains—dividing from immediately beneath the

tendon of the tarsi to the orbital margin; otherwise, the matter will make its way by a process of ulceration, which will materially affect the structures bounding the sac anteriorly, so as to give rise to a degree of after deformity; and, perhaps, establish a small fistulous opening between the sac and the cheek. If the sac be opened before the integuments become implicated in the disease, the patient usually recovers with scarcely any mark. After the opening has been effected, emollients should be frequently employed, until the wound closes: in most of the cases that I have seen, the patients have recovered without any permanent obstruction in the sac, or in the nasal duct.

I conceive that, in the first instance, the lining membrane of the sac becomes so thickened as to destroy the cavity, and cause the swelling which I have described as feeling hard and circumscribed; but that, as the inflammation advances, suppuration takes place from the mucous surface, causing further tumefaction, and producing the elastic feel of the tumor: if the ulcerative process have not commenced, the different structures regain their healthy condition, soon after having been relieved from the pressure of the matter.

CHRONIC INFLAMMATION OF THE
LACHRYMAL SAC.

Local
symptoms.

IT is not until this disease has made some considerable progress, that the patient applies for professional assistance; and this is done, usually, in consequence of suffering from epiphora, and some uneasiness in the situation of the sac: there is usually, also, an agglutination of the cilia, during sleep; and an impaired condition of vision, from the collection of secretion on the surface of the globe.

Appearances.

Unless the eye have been recently cleansed, the surface of the globe is covered with an unusual quantity of fluid; the ciliary margin has generally a redish aspect, especially towards the inner canthus, which is often excoriated; a degree of fulness is perceptible in the situation of the sac, and the puncta are more elevated and distinct than in the natural condition; if pressure be made on the sac, a quantity of secretion, consisting of tears, and mucous fluid with small flakes of lymph or globules of pus, mixed in it, will escape from the puncta on to the surface of the globe. Unless the disease be far advanced, similar matter escapes into the nostril, from

pressure on the sac. In the more advanced stage of the disease, the nostril becomes dry, from a perfect obstruction of the nasal duct: enlargement of the sac then becomes much more apparent; and, when pressure is made upon it, its contents are entirely discharged through the puncta.

In some few instances, I have seen the sac so far distended as to form a tumor, equal in size to an ordinary nut; and this even when the obstruction of the nasal duct has not been complete.

An ulcerative stage is occasionally induced, by which the mucous membrane of the sac becomes in part destroyed; and I believe most frequently in the situation subjacent to the integument: this is indicated by an increase of pain, by an admixture of blood with the discharge, and in the tenderness of the part; the surface of the swelling acquires a more elastic feel, and assumes a red appearance; eventually, it gives way by the ulcerative process, so as to allow of the escape of the contents of the sac, and, subsequently, of the secretions which are continually brought from the surface of the eye into the sac, through the puncta; the continued flow prevents the healing of the wound, and a fistulous opening generally results, constituting true *fis-tula lachrymalis*: otherwise, the ulcerated aper-

Fistula lachrymalis.

ture closes, a fresh collection takes place in the lachrymal sac, inflammation ensues, and the parieties again give way to ulceration. In this manner, repeated discharges occur : each time, however, that fresh inflammation and ulceration arise, the anterior boundaries of the sac suffer more and more, until, eventually, the whole presents an indurated and callous aspect.

*Caries of the
os unguis.*

If the ulceration destroy the soft parts covering the os unguis, its vitality is soon destroyed, and a state of caries or necrosis is produced. This is usually denoted by the fetid character of the discharge, whether the sac be opened by ulceration, or not.

Treatment.

It would be improper, when such disease exists, to perform any operation to remove the bone, though the attention of the surgeon should be directed to the removal of the osseous affection. If the sac be not opened by ulceration, it should be opened by incision, to allow of a free escape of the morbid secretion ; and in order to promote a healthy action in the part, as well as to correct the fetid nature of the secretion, injections should be employed three or four times in the day, consisting of a weak solution of the nitric or muriatic acid, or of the chloride of lime or of soda. The occasional introduction of the probe will enable the surgeon to judge of the subsidence of the disease in the bone ; and as soon

as this has occurred, means should be resorted to, to re-establish the communication between the sac and the nose, by the introduction of a style: during the treatment, frequently, the aperture formed in the anterior wall of the sac has a tendency to close; when it is necessary to insert a small portion of lint, moistened with the stimulating lotion, through the opening.

The most frequent causes of chronic inflammation of the sac are, either extension of similar disease by continuity of surface, from the conjunctival layer of the palpebræ to that of the puncta, and thence to the sac; or, otherwise, the irritation of a morbid secretion, resulting from chronic disease of the palpebræ, which is conveyed through the puncta to the sac, where it creates a similar disease; it may also arise in the sac, or mucous membrane of the sac, without any previous affection of the palpebræ; but I consider such cases extremely rare, unless produced by external injury.

The disease occurs at all periods of life; but is much more frequent in those of scrofulous habit, than otherwise.

In the early stage, before the nasal duct is quite obstructed, the means that suffice for the cure of simple chronic inflammation of the palpebral conjunctiva, will be found equally efficacious in promoting the cure of the disease, when

the obstruction of the duct is complete ; but without much distention of the surface of the sac, I have usually found the following plan successful :

The application of a leech or two in the neighbourhood of the sac ; and the use of a mild astringent lotion, three or four times a day, to the part, with a slightly stimulating ointment, every night, or night and morning, to the free margins of the palpebræ, and to the inner canthus : the leeches should be repeated, whenever the tenderness on pressure is felt ; and the form of the application must be occasionally varied, as any one astringent or stimulant soon loses its effects from continued use.

If the surface of the sac have become red, and the part very tender to pressure, with a dry condition of the nostril, I do not believe that much can be done, by any means, short of operation : but I always consider it right to try the treatment just described, before resorting to the more violent means ; and I have succeeded in producing relief, when I have little expected such a result.

Use of the
punctum
probe.

A variety of means, principally mechanical, have been, from time to time, proposed and adopted, for the relief of such cases : as the introduction of a small probe through the puncta lachrymalia into the sac, and thence through the nasal duct to the nose. I have given a very full

and fair trial to this plan ; but have never been able to do more than produce some slight benefit, and that only for a very short period ; nor do I think it likely that much continued good would result from such treatment ; inasmuch as the instrument employed must be of very small size, and much more likely to find its way into the nose by perforating the thickened membrane, than to take the course of the natural channel : and even supposing it to do this, it can produce but a very trifling effect on the diseased membrane. I should conceive that the cure of a permanent stricture of the urethra would be as likely to result from the introduction of the ordinary pocket probe, as that the obstruction of the nasal duct should be cured by the introduction of the punctum probe.

Another plan recommended is the passing of a probe, or bougie, from the nasal extremity of the duct to the sac. I have not given so full a trial to this plan, as to that last mentioned ; but I consider it as little likely to succeed, in consequence of the anatomical condition of the nasal aperture.

The injection of warm water, by means of Anel's syringe, through the puncta, into the sac, I have also fully tried ; but without any decided relief. I have repeatedly endeavoured to overcome the obstruction, by introducing a fine silver

injections of
the sac.

tube, connected with a narrow glass cylinder, capable of holding a considerable column of mercury, through one of the puncta into the sac; so as to throw the weight of the column upon the duct; but this plan has not proved of any more service than those just detailed.

From the result of my experience, I should recommend, that after a fair trial of the leeches, followed by astringents and stimulants, had proved unsuccessful, an operation should be performed, either for the purpose of introducing a style, or tube.

OF THE OPERATIONS FOR OBSTRUCTION OF
THE NASAL DUCT.

THE only operation which I adopt in such cases, is for the purpose of opening and maintaining the communication between the lachrymal sac and the nose.

The mode of opening the duct should be similar in all cases ; but two plans are in use to maintain a communication between the sac and nose, sufficient to carry off the lachrymal secretions : the most common plan is to place a style (*see plate 9, fig. 13,*) in the duct, of less diameter than the duct itself, and provided with a head which rests upon the skin external to the sac ; and is, therefore, constantly apparent ; the head prevents the style from sinking into the canal ; and, at the same time, by its pressure on the opening in the external part of the sac, hinders the escape of fluid from the sac to the cheek : the secretions pass readily by the side of the style into the nose ; and the patient is relieved

from all the inconvenience of epiphora. At other times, a tube (*see plate 9, fig. 12,*) is employed, which is passed into the duct and sac, being provided with a head, which presents a concavity upwards, and from the depth of which the tube is continued : this head rests at the bottom of the sac, and prevents further descent of the instrument ; the integuments are closed over the head of the tube, so that no subsequent deformity results ; and the secretions, conveyed by the puncta into the sac, pass into the cup-like head, and thence through the tube to the nose ; and the eye remains comfortable.

The style produces constant deformity—the tube is not seen ; but the style can be removed at any time without pain, whilst the tube cannot be taken away without operation ; and it is necessary, sometimes, to remove these instruments : I prefer the style, principally, because it can be so readily removed, if irritation or inconvenience result.

The best mode of opening the sac and duct is as follows :

Operation.

The patient should be seated on a common chair opposite a good light, when a sharp-pointed knife or lancet should be passed through the anterior wall of the sac, just below the position of the tendon of the tarsi ; the point of the instrument should be directed backwards, and a little

inwards, so as to strike upon the part of the os unguis which forms the posterior boundary of the sac; then the instrument should be carried downwards as far as the margin of the orbit will permit, the point being kept in contact with the os unguis; thus the sac should be freely opened. The knife being laid aside, a probe of uniform diameter, of common size, and without a bulbed extremity, should be passed into the sac, in the same direction as the knife had penetrated; and, as soon as the extremity of the instrument touches the os unguis, the end should be directed downwards in the course of the duct. By keeping the extremity of the probe against the posterior wall of the duct, the surgeon can hardly fail to direct the instrument properly; and very gentle pressure downwards will suffice to convey it to the nose: the degree of obstruction varies in different cases, and I have had to use considerable force, in a few instances, to get through the duct.

As soon as the probe is withdrawn, a style, or a tube, may be introduced.

If a style be employed, it should be as long as from the inferior part of the sac, to the upper part of the ala of the nose; and a piece of fine silk should be placed and secured round it, just below the head; and the ends of the silk should be allowed to remain about three inches long.

so that they can be secured on the forehead by a piece of sticking plaster, when the style has been introduced: this is necessary, because the size of the opening into the sac usually exceeds that of the head of the style, so that it readily sinks into the sac; and unless the silk were attached to the style, it would be difficult to raise it, and keep it in its proper place, whilst the wound closes round the stem of the instrument: as soon as the wound does so close, the silk may be removed. Should the style slip down the duct, so that the head becomes buried in the sac, and no silk or thread be attached to lift the instrument with, it is very difficult to extract the style by attempting to seize the head; but it is easily raised by tilting the lower end which rests against the floor of the nose. I have several times succeeded readily, in removing styles which have, accidentally, passed into the duct, further than was intended, by acting upon the nasal end; and after repeated attempts to seize the head had failed.

Subsequently, the style should be taken out at least once a week, and having been cleansed, it should be replaced as soon as possible: if this instrument be too long, it irritates the nose; and if too short, it does not effect the desired purpose.

The tube should be introduced in the same course as the style, but it requires much force to

fix it properly in its place ; the projection just below the cup or head, being of greater diameter than the duct itself : in pressing the instrument into its place, the force employed breaks the unguis. The highest part of the cup should be placed towards the nose, and rest, therefore, against the os unguis. Afterwards, the edges of the external wound should be closed over the head of the tube ; thus, it subsequently becomes fixed by its projections as the unguis unites, and remains hid in the sac and duct : the secretions of the eye pass through it to the nose.

The tube is not adapted to cases in which there has been much ulceration and thickening of the outer wall of the sac, as these parts will not close over the head of the tube.

I have introduced above fifty of these tubes, and with very excellent success ; for I have only had to remove two of them, and know of one other having been taken out by another surgeon : in two other cases, the tube became obstructed, but I readily cleared it by a punctum probe passed through one of the puncta, into the tube.

In passing a punctum probe, due attention must be given to the course of the canal, from the punctum to the sac, or the operation will not be readily accomplished. If the surgeon desire to pass the instrument by the inferior

Passing the
punctum
probe.

canal, the point should be placed in the orifice of the punctum, and directed downwards and a little outwards, till it is obstructed ; then the instrument should be turned so as to direct the point upwards and inwards, when it will pass readily to the sac.

DESCRIPTION OF PLATES, VOL. I.

PLATE I.

Fig. 1. Represents simple inflammation of the conjunctiva, affecting both the ocular and palpebral divisions of the membrane; the vessels of the former distinct, and passing from the direction of the orbital circumference towards the margin of the cornea, being somewhat tortuous, dividing, subdividing, and anastomosing as they approach the cornea; the latter, (or palpebral membrane,) being more uniformly florid, and the vessels upon it less distinct.

Fig. 2. Represents simple pustular ophthalmia, with pustules formed in the most common position, just over the junction of the cornea and sclerotic, a plexus of conjunctival vessels feeding or leading to the pustules.

Fig. 3. Represents simple ophthalmia, with an ulcer on the cornea in a healthy condition, being opaque from deposit of fibrin.

Fig. 4. Represents simple ophthalmia, with an ulcer of the cornea evincing excess of action; the ulcer being filled with opaque fibrin, and vessels carrying red blood being

continued from the conjunctiva of the sclerotic to that of the cornea, and thence to the ulcer.

Fig. 5. Represents the second stage of purulent ophthalmia, the conjunctiva scleroticæ being elevated around the cornea (chemosis) by deposit of fibrin and serum in the subjacent cellular tissue.

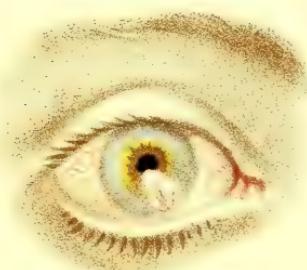
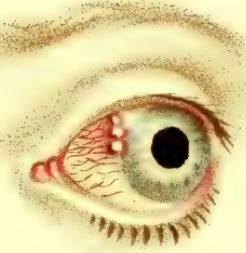
Fig. 6. Represents the last stage of purulent ophthalmia; the cornea being mortified; the chemosed membrane lax and pallid; and the palpebrae swollen, but dull in color.

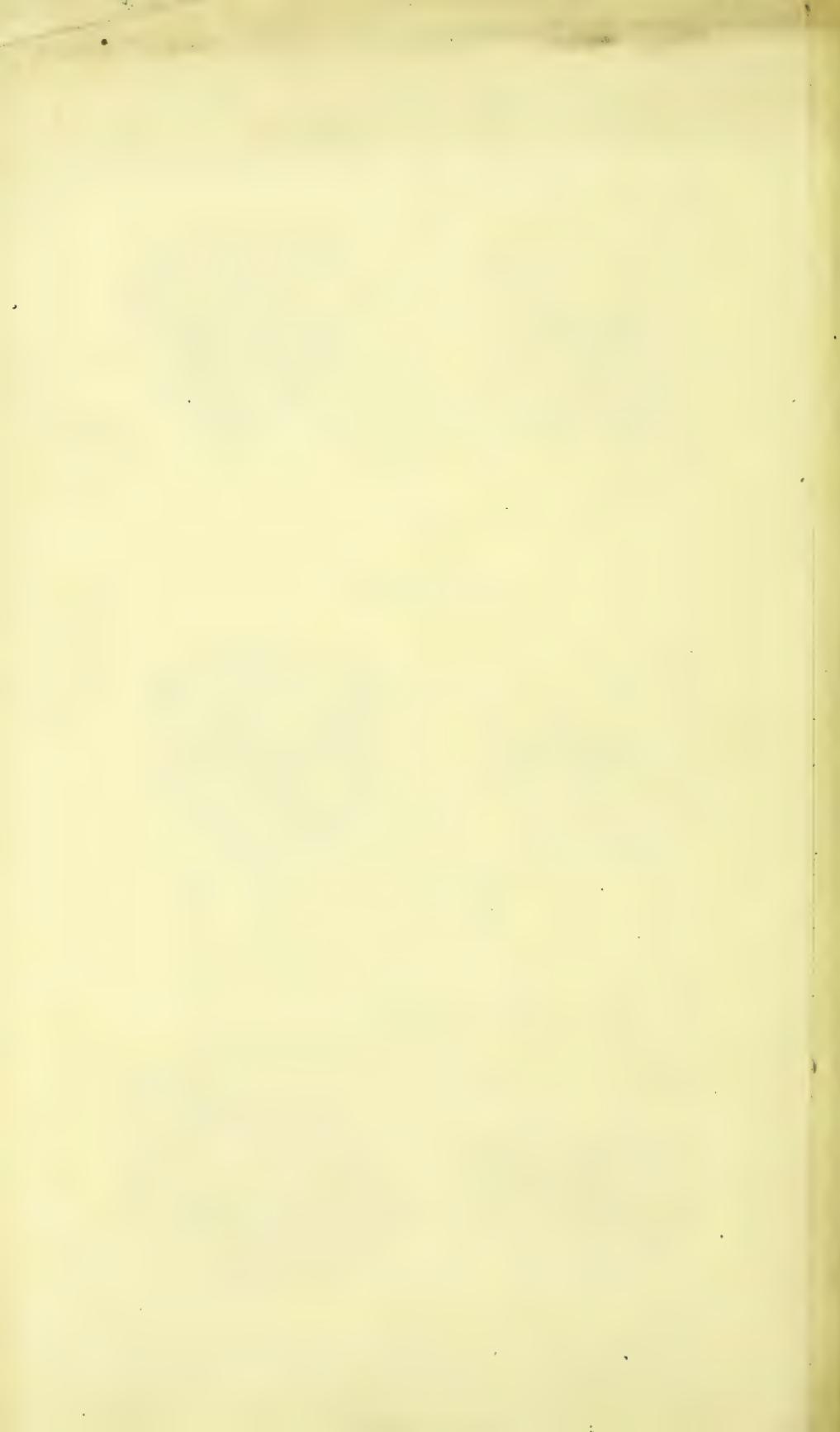
PLATE II.

Fig. 1. Represents inflammation of the aqueous membrane, there being a general haze of the membrane, but a spot more dense, from greater deposit of fibrin, at the upper and outer part; numerous vessels of the conjunctiva and sclerotic filled with red blood.

Fig. 2. Represents acute inflammation of the cornea; there being a general nebulous state from interstitial deposit of fibrin, and a plexus of vessels filled with red blood forming a crescentic figure at the upper part of the cornea; many vessels of the conjunctiva, and a few of the sclerotic filled with red blood; the principal of the former seated above and communicating with the plexus in the conjunctiva corneæ.

Fig. 3. Represents the nebulous and vascular state of the cornea consequent upon a thickened and granular state of the conjunctiva of the upper eyelid; vessels carrying red blood are seen passing from the upper part of the cornea towards the lower part; they are seated in the conjunctiva corneæ, which is much thickened and opake.







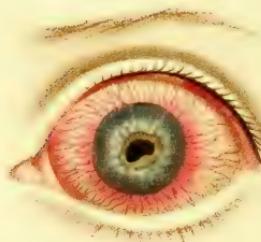
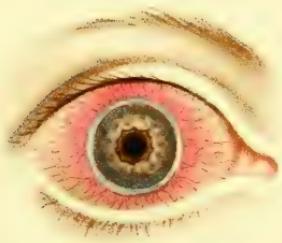


Fig. 4. Represents the nebulous and vascular state of the cornea resulting from continued chronic strumous ophthalmia; the conjunctiva corneæ being thickened and somewhat opake, and numerous vessels filled with red blood being apparent in the conjunctiva, and continuous from the sclerotic, to the corneal portion of that membrane: the vessels pass to the cornea from every part of its circumference instead of from the upper part only, as in *fig. 3.*

Fig. 5. Represents staphyloma corneæ; the natural cornea having been destroyed by ulceration or mortification; a newly formed opake mass projects from the site of the cornea, and has the iris adherent to it posteriorly.

Fig. 6. Represents staphyloma scleroticae; the sclerotic coat being partially thinned and protruded around the cornea, from effusion or deposit beneath; the discoloration results from the subjacent coloring matter appearing through the thinned part of the sclerotic.

PLATE III.

Fig. 1. Represents inflammation of the iris with deposit of fibrin in three tubercles upon the anterior surface of the membrane; the iris being dull and discolored, and its pupillary aperture rather contracted and irregular; the red zone around the cornea results from the injection (by anastomosis,) of vessels of the sclerotic with red blood.

Fig. 2. Represents acute inflammation of the aqueous membrane, with ulceration and effusion of pus into the anterior chamber. (Onyx.) The general haze results

from thickening of the aqueous membrane ; and a dense irregular spot over the inner part of the pupil indicates the position of the ulcer from which the pus, collected at the lower part of the anterior chamber, has been effused : the general redness depends upon the vessels of the sclerotic and conjunctiva being filled with red blood.

Fig. 3. Represents simple inflammation of the iris ; the iris being dull and discolored, and the pupil contracted and irregular ; and a uniform red zone being apparent around the cornea, produced by vessels of the sclerotic distended with red blood ; the grey line or ring seen at the margin of the cornea, and separating it from the red zone, has been considered diagnostic of rheumatic ophthalmia or iritis ; but its true character is explained at *page 342*.

Fig. 4. Represents inflammation of the sclerotic and iris ; the former being dull and discolored, and with a small and irregular pupil ; but the red zone around the cornea is not uniform, being much greater below than above, and not in proportion to the disease of the iris, being much greater than in simple iritis.

Fig. 5. Represents a prolapse of the iris, through an ulcerated opening in the cornea : the projecting portion of the iris is termed *myocephalon* : the pupil is distorted and pear-shaped : a light opaque line at the base of the projecting iris indicates that the proper adhesive action has commenced.

Fig. 6. Represents a cyst attached to the anterior part of the iris. *See case 49, page 368.*





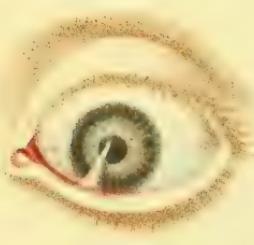
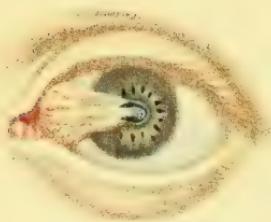


PLATE VII.

Fig. 1. Represents lippitudo, or the third stage of tinea.

Fig. 2. Represents the first stage of tinea.

Fig. 3. Represents trichiasis, or inverted eyelashes.

Fig. 4. Represents eversions of the palpebræ. Ectropium.

Fig. 5. Represents an encysted tumor of the tarsus connected with the superior palpebra, and a stye on the margin of the inferior.

Fig. 6. Represents an inversion of the superior palpebra. Entropium.

PLATE VIII.

Fig. 1. Represents a membranous pterygium.

Fig. 2. Represents a fleshy, or muscular pterygium.

Fig. 3. Represents a slender frænum, or band of adhesion, between the inferior palpebra and the globe.

Fig. 4. Represents two congenital fibrous tumors connected with the sclerotic and cornea.

Fig. 5. Represents a conical cornea.

Fig. 6. Represents the globe distended and enlarged by hydrocephalus.

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